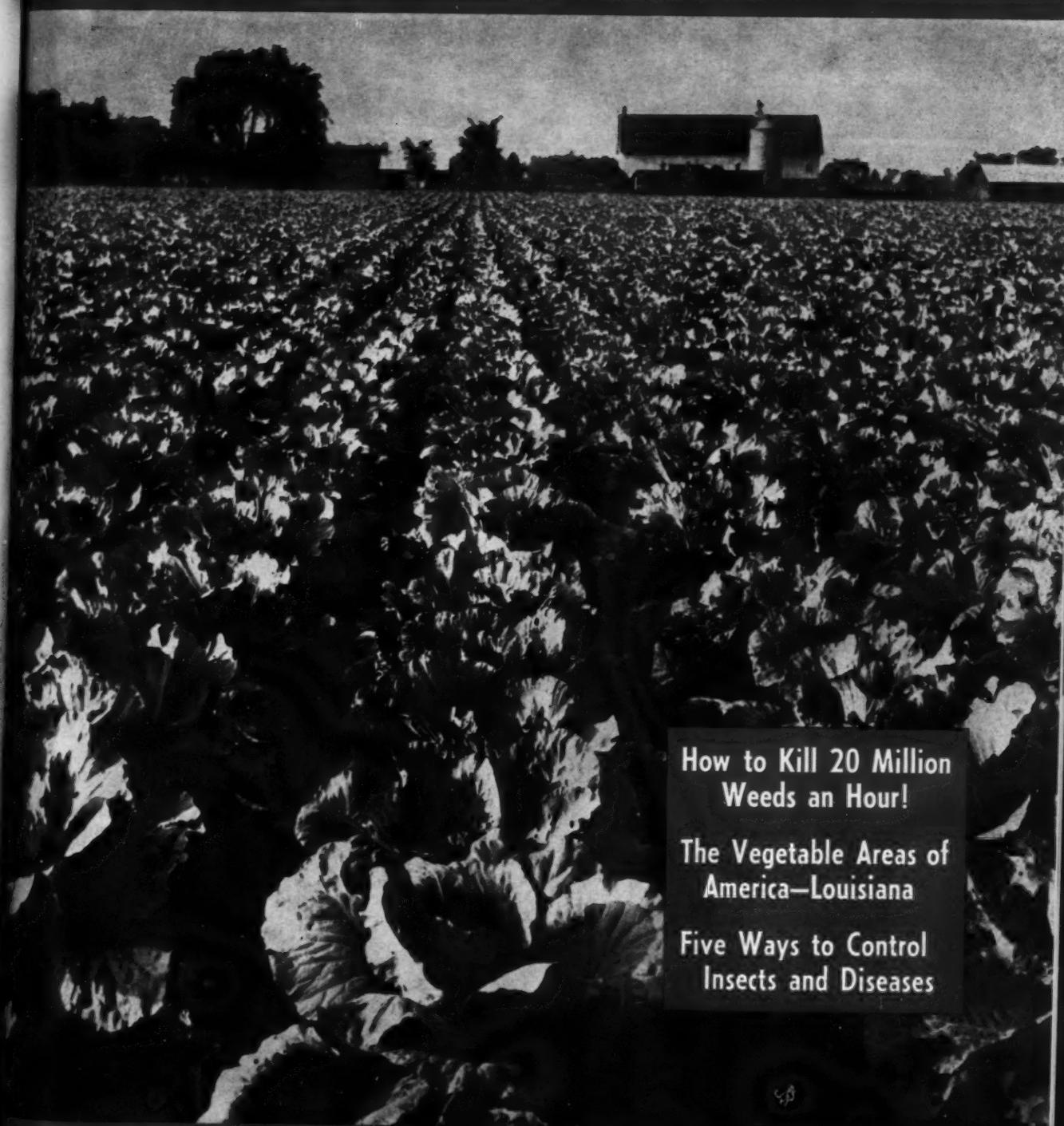


American Vegetable Grower

MAY • 1956



How to Kill 20 Million
Weeds an Hour!

The Vegetable Areas of
America—Louisiana

Five Ways to Control
Insects and Diseases

Facts You Should Know About Air-blast Spraying

BIGGEST MONEY'S WORTH in Pickups for '56



NEW FORD F-100 8-FT. 1/2-TON PICKUP,
GVW 5,000 lbs. Choice of 133-h.p. Six or 167-h.p. V-8.

Most Power!

Ford's new 1956 line of Pickups offers you the most power and performance in Ford history. Only the Ford Pickups give you gas-saving Short Stroke design in two engine choices, V-8 and Six! Ford's got the only modern Short Stroke Six in the 1/2-ton field!

Most Capacity!

Ford's new 8-ft. box gives you more loadspace than any other 1/2-ton pickup—up to 19 cu. ft. more. Available on the 118-in. wheelbase. Extra cost is surprisingly low. The standard 6½-ft. box, on the 110-in. wheelbase, is one of the roomiest in its field—gives you a full 45 cu. ft. of loadspace.

Most Comfort!

Ford's new Driverized Cab is the easiest of all cabs to get in and out of. Doors open a full 70°—as much as 25° wider than other trucks. Most restful ride in any truck is yours with full foam rubber, 5 inches in seat, 3 inches in seat back . . . offered with 13 other extras in Custom Cab, low added cost.

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Only Ford Trucks have new deep-center Lifeguard steering wheel. Helps protect driver from contact with steering column in case of accident. Only Ford Trucks have new Lifeguard door latches, to help guard against doors springing open in an accident. No extra cost! Ford seat belts available at low added cost.

To get the most
for your old truck, see
your Ford Dealer now!

FORD TRUCKS LAST LONGER!



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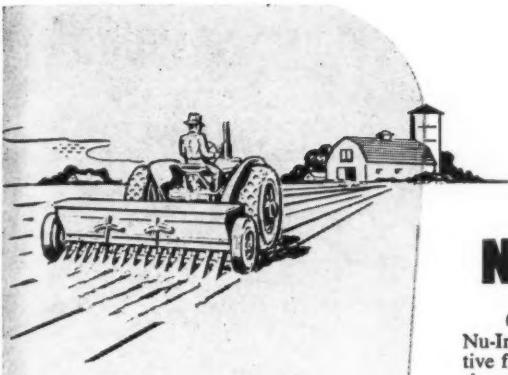
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MAY, 19



Correct NUTRITIONAL DEFICIENCIES

Control FUNGUS DISEASES

There's a superior TC product to correct most nutritional deficiencies and TRI-BASIC COPPER SULFATE to prevent and control certain persistent fungus diseases.

ES-MIN-EL and CUSTOM MIXED MINERAL MIXTURES

The essential mineral elements . . . Contains Manganese, Copper, Iron, Zinc, Boron and Magnesium, all essential to healthy, productive soil. Fruits and vegetables rich in vitamins cannot grow in soil poor in minerals. For soil application. ES-MIN-EL in spray or dust form for direct application to the plants is also available . . . Contains nutritional Manganese, Zinc and Copper.

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(*Manganous Oxide*)

An extremely effective nutritional manganese product for correcting manganese deficiencies due to low manganese content of the soil . . . Applied in spray or dust form.

COP-O-ZINK

(*Nutritional Copper-Zinc*)

This nutritional compound contains 48% copper and 4% zinc . . . Can be applied directly to the plants in spray or dust form. For correcting copper and zinc deficiencies and for stimulating healthier plant growth.

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(*Nutritional Manganese*)

A nutritional manganese compound to be fed to the plants through direct application in spray or dust form . . . To correct manganese deficiencies and to stimulate healthier plant growth.



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Tennessee's Nu-Z, Nu-Iron, Nu-M and Tri-Basic Copper Sulfate are especially suited for use in preparing nutritional and fungicidal spray and dust mixtures and for use in mixed fertilizers.

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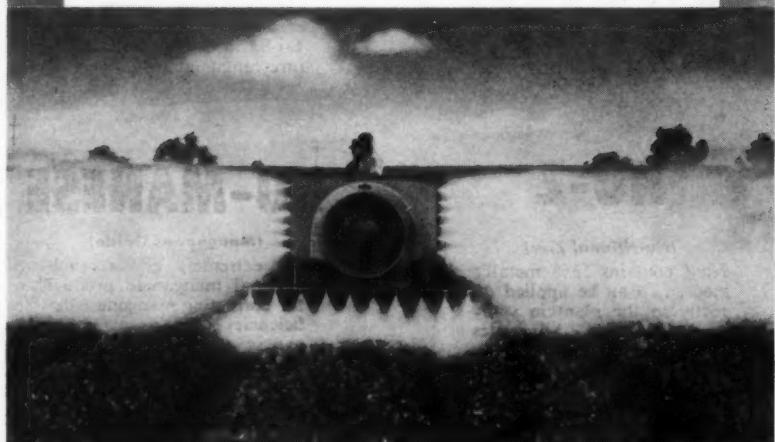


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**AMERICAN
VEGETABLE GROWER**

REG. U. S. PAT. OFF.
(Commercial Vegetable Grower)

Vol. 4 May, 1956 No. 5

FEATURED IN THIS ISSUE

Cover photograph by H. Armstrong Roberts.	
Facts You Should Know About Air-Blast Spraying	9
By J. D. Wilson	
The Vegetable Areas of America—Louisiana	10
By Julian C. Miller	
Five Different Ways to Control Insects and Diseases	12
By Eldon S. Banta	
How to Kill 20 Million Weeds an Hour!	13
By Norman J. Smith	
Okra . . . The Gumbo Plant	20
He Bags His Carrots . . . and Regains Market	22
By Charles L. Stratton	
How to "Bag" Carrot Sales	23
Soil Insecticides . . . Your Underground Partner!	24
By D. E. Greenwood and R. N. Hofmaster	

DEPARTMENTS

Letters to the Editor	6
State News	14
Know Your Vegetable Seeds	14
Calendar of Coming Meetings and Exhibits	19
Answering Your Questions	35
New for You	36
Book Review	37
Editorial Page	38

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FRUITS	Woolly apple aphid Bud moth	FRUITS	Leafhoppers Black-headed fireworms		
Apples	Green apple aphid Rosy apple aphid Mealybug	Cranberry	Spittlebug nymphs Cranberry fruitworm Codling moth, California and Southwest		
	Mites such as: European red mite Clover mite Willow mite Red-banded leaf roller	Grapes	Spider mites		
	Codling moth Peach curculio Red-banded leaf roller	Dates	Mealybugs		
	Forbes scale	Pearrops	Niland beetle July bug		
Pears	Mites Pear psylla Mealybug Codling moth Peach curculio Fruit tree leaf roller Red-banded leaf roller	Fruits & Prunes	Mealy plum aphid Plum curculio and Mealy plum aphid		
Peaches	Mites such as: European red mite Two-spotted spider mite Codling moth Blue curculio	Strawberries Berries	Aphids Spittlebug		
Apricots	Codling moth Orange tortrix European Lecanium scale Soft brown scale Aphids	Blueberries	Cranberry fruit worm Cherry fruit worm Blueberry maggot		
Avocados	Latan Green Omnivore Orange Soft brown	VEGETABLES	Spider mites Aphids Potato russet mite Cabbage maggot Cabbage worm Cabbage		
Mango & Passion Fruit	Fruit flies		bean beetle Caterpillar Cabbage Caterpillar		
Cherries	Black cherry Black cherry aphid Fruit tree leaf				

Not in recent years has any insecticide appeared that is so useful and—at the same time—so usable as malathion.

No other insecticide offers such high insect-killing power and such a high degree of safety to the user.

Malathion is accepted by the USDA for control of more than 80 insects on over 45 crops. It is the preferred insecticide for fly control . . . kills poultry mites, too.

And note these other advantages: You can apply malathion as close as 72 hours before harvest on many crops. And malathion is compatible with most other insecticides and fungicides.

Malathion insecticides are available from well-known manufacturers as wettable powder, emulsifiable liquid and dust. Order from your regular supplier. Do it today!

Cauliflower Aphids

Cucumber squash Melon Aphids
Spider mites Leafhopper on melon

Eggplant Aphids
Spider mites Leafhoppers

Pepper Aphids
Aphids Leafhoppers

Bells Aphids Leafhoppers

Potatoes Aphids Leafhoppers

Onions Turnips Aphids Mites

Spinach Aphids Mites Cabbage looper

Radishes Aphids Leafhoppers

Celery Aphids Spider mites

Alfalfa Aphids Potato leafhopper
Spider mites Alfalfa weevil larvae Spittlebug

Vetch bruchid Grasshoppers

Clover Aphids Mites Young grasshoppers Leafhoppers

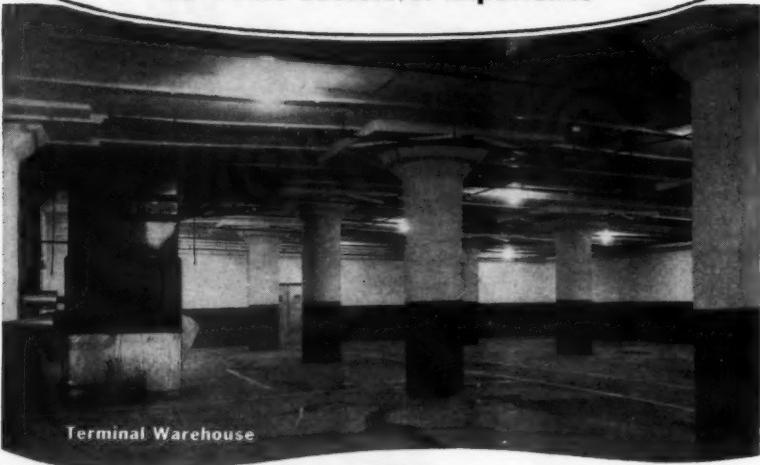
Tobacco Aphids

FREE: 1956 edition of MALATHION GROWER'S GUIDE

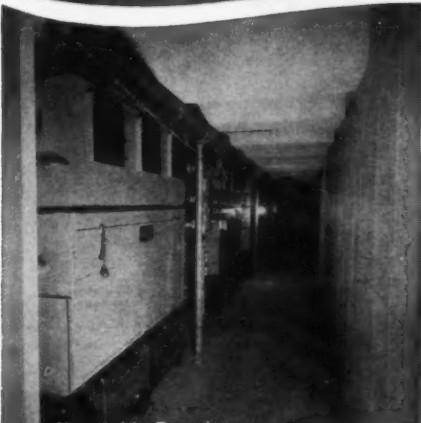
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LETTERS TO THE EDITOR

Green Onion Bulbs

Dear Editor:

Along with my subscription to AMERICAN VEGETABLE GROWER, I am sending one of our new cartons of green onion bulbs. This package is being put up by Dutch Valley Growers, Inc., of South Holland, a farmers' co-operative.

Green onion bulbs are a selection of the better size bulbs from the onion sets. They



are the easiest and the most successful way to grow green onions either for sale or for the home garden. They can be started in the basement and even grown there if you have some sunlight. They can be planted outside in the latter part of winter and covered until spring sets in.

Ideal planting conditions are: After the frost is out of the ground, set in good loose soil up to the tip (either cover or leave uncovered). The plot should be well drained and fed with a high nitrogen fertilizer. Any good garden analysis will do. Keep the soil loose and the weeds under control. They will be the first vegetable in your garden ready to eat.

South Holland, Ill. Judd Dalenberg

Marketing Peppers

Dear Editor:

I think your magazine is excellent in direct coverage of the vegetable grower's problems and clear, concise information regarding the latest improvements in the field. So much for so little.

Could you furnish us with some names and addresses of brokers, individuals, or produce houses in Illinois that would be interested in handling an early sweet pepper crop from this area? We are interested in developing this section as the land, climate, adaptability of machinery, etc., lead us to believe that we can produce this crop at least two weeks earlier than southern Illinois.

Wynne, Ark.

Jack Hooper

We sent our reader a list of the following wholesale buyers, brokers, and co-operatives in Chicago: L. Gillarde & Sons Co., 141 W. Jackson Blvd.; D. M. Jacobson Co., Gridley, Maxon & Co., Inc., M. Lapidus & Sons, Riley-McFarland Co., S. H. Becker Co., Mushroom Growers Assn. Sales Co., and American National Foods, Inc., all located in South Water Market.—Ed.

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LE GROWER

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IT'S ALL HERE IN THE...

ADVANCED

FERGUSON
SYSTEM

40



Vegetable growers everywhere will benefit from *Power Command* . . . the integration of the advanced Ferguson System with 4-Way Work Control and other Ferguson *firsts* to provide complete and instant mastery over tractor and implement operation.

See how the one tractor that dared to be different years ago still leads the way with five new models, every one of them with the famous Ferguson System: the new "40"; three "Hi-40" models . . . and a better than ever Ferguson "35". *Ferguson*, Racine, Wisconsin.

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- ★ **NEW POWER STEERING**
Factory installed option.
- ★ **HEAVIER, LONGER
MID-MOUNT, TOO!**
New Mid-Mount Cultivators available.
- ★ **NEW, 12-VOLT
ELECTRICAL SYSTEM**
Hotter spark for surer starts.
- ★ **FREE VACATION
TRAVEL CONTEST**
Ferguson Dealers have the details.

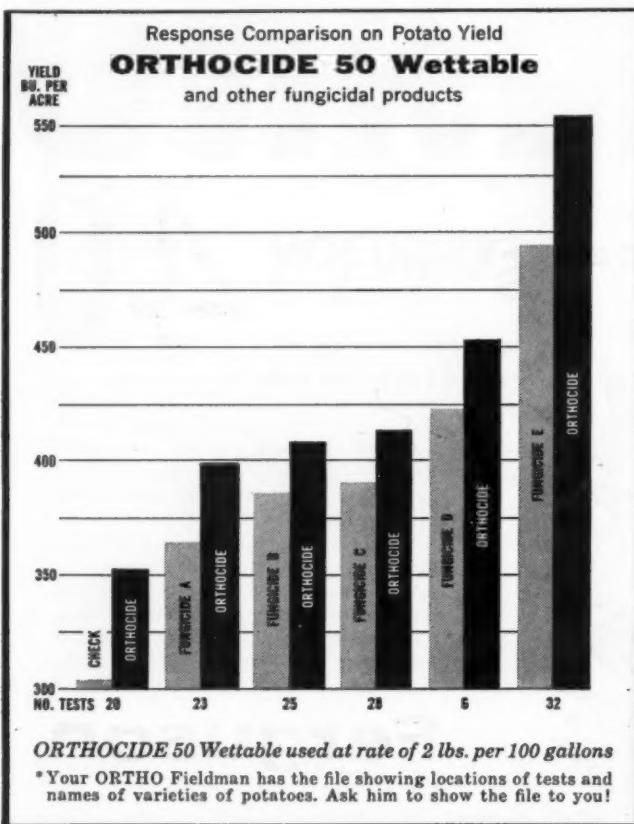
ORTHOCLIDE 50 Wettable

(contains captan)

WINS FIRST PLACE

in potato and tomato fungicide comparison tests

Look at these results from 134 comparisons to ORTHOCIDE on 12 varieties of potatoes in 15 states and 3 Canadian provinces*



ON ALL CHEMICALS, READ DIRECTIONS AND CAUTIONS BEFORE USE.
T.M. REG. U.S. PAT. OFF.: ORTHO, ORTHOCIDE.



CALIFORNIA SPRAY-CHEMICAL Corp.

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Maumee, Ohio; Haddonfield, New Jersey; Medina, New York;
Columbia, South Carolina; Orlando, Florida.
Branch offices throughout U. S. A.

See for yourself in the result chart at the left. ORTHOCIDE 50 Wettable proved superior to other fungicides tested.

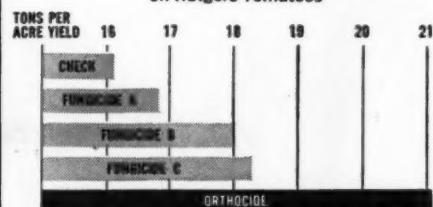
When you use ORTHOCIDE (contains captan) it can be like "extra money" growing on your potato plants. To get that "extra money" *this crop year*—start an ORTHO program featuring ORTHOCIDE now.

Tomatoes, too!

Tests at Rutgers University show ORTHOCIDE 50 Wettable increased yield nearly 3 tons per acre over copper 53; exactly 3 tons per acre over competitive fungicide #1; 4½ tons per acre over competitive fungicide #2 and nearly 5 tons per acre over untreated plants.



Response of ORTHOCLIDE 50 Wettable on Rutgers Tomatoes



Proof like this points the way clearly to greater profit from better yields of better quality tomatoes. Isn't that what you raise them for? Then use ORTHOCIDE!

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Facts You Should Know About AIR-BLAST SPRAYING

This new method of precision spraying means a big savings in water. Here are recommendations for getting the best results with air-blast equipment

By J. D. WILSON

Ohio Agricultural Experiment Station

WATER is the cheapest ingredient in a spray mixture—but vegetable growers are greatly interested in the possibility of using less of it in their spraying operations.

Water is sometimes in short supply at the spray site and may have to be hauled a considerable distance. This may require an extra piece of equipment. Besides this, it is in short supply in many parts of the country.



The spraying job is done quickly and effectively with air-blast equipment. What the maximum spray swath should be is discussed in the article.



Concentrated sprays applied with air-blast equipment gave good control of diseases in tomatoes in Ohio experiments.

For these reasons air-blast spraying, which uses less water than commonly used methods of spraying for insect and disease control, holds a great appeal for many large growers.

So-called "concentrate" spray formulations may be applied with the commonly used hydraulic sprayer or with an air-blast machine. Air-blast sprayers now being used on row crops are designed to apply the spray material in a more concentrated formulation than the older, more familiar

recommendation of 2 to 4 pounds of the fungicide in each 100 gallons of water, applied at 125 to 200 gallons per acre.

Concentrated 4X and 5X formulations applied at 40 to 30 gallons per acre, respectively, are most commonly used in the air-blast spraying. The spray material is most often introduced into the air streams at 400 pounds per square inch at air velocities of 80 to 100 miles per hour.

Pump capacities of 15 to 20 and

even more gallons per minute are most commonly used with the air-blast sprayers of today. However, many details of construction, design, and operation still remain to be determined in actual field operations before air-blast spraying obtains its maximum performance in the control of vegetable diseases.

Anyone using an air-blast sprayer for the first time should remember that the use of less water does not mean that the amount of fungicide applied per acre can also be reduced. For instance a 4X formulation would be required if the application of 40 gallons of the concentrate per acre were to correspond to the use of 160 gallons of an "X" formulation.

Also, it is poor practice to operate an air-blast sprayer in gusty winds or those in excess of 6 or 7 miles per hour. Furthermore, excessive swath widths should be avoided or the spray deposit in the outer limits (center of a double swath) may be insufficient to insure good disease control.

Performance studies with a variety
(Continued on page 32)

THE VEGETABLE AREAS OF AMERICA

LOUISIANA

By JULIAN C. MILLER

Louisiana State University

This is the sixth of a series on the important vegetable areas in the United States. New Jersey, Florida, Eastern Virginia, Arizona and Mississippi were covered in past articles.—Ed.

FROM its earliest settlement by the French, Louisiana has been known for its production of vegetable crops.

In the early 1800's river boats coming from Pittsburgh and St. Louis found that they could bring certain products, such as apples and potatoes, and on the return trip take back certain items, such as early potatoes, oranges and pecans. However, it was not until the Illinois Central Railroad was built from

However, as the population moved West many of the crop production areas moved with them. Carrots and onions moved to south Texas, and lettuce, garlic and artichokes to the West Coast. While they are still planted in south Louisiana, they are not produced in quantity as in times past.

Mixed Vegetables: For a long period of time Louisiana has been



Canfreezer pole bean, developed at the Louisiana station, is the leading commercial variety grown in Louisiana. It is ideal for processing.

Chicago to New Orleans that the vegetable area took on major proportions. This development took place just before the War Between the States and shortly thereafter.

Since these early periods south Louisiana has been a major section in the production of vegetables for shipment, as well as for local use.



LaSoda Irish potato developed at Louisiana station is high-yielding, early, red potato. Suited not only to Louisiana and Gulf Coast, it is a leading variety in north central potato states.

noted for its shipment of mixed vegetables. These usually consist of shallots, carrots, and various greens such as mustard, turnips, beets, endive, and escarole, with shallots making the bulk of the load.

Louisiana is one of the few states that produce shallots in quantity today. This member of the onion family can be found on the market from November to May. The Louisiana station has bred varieties for all occasions, and one in particular, Evergreen, which does not die down or form sets during the summer. Therefore, the shallot can be found on the French Market at New Orleans practically every day during the year.

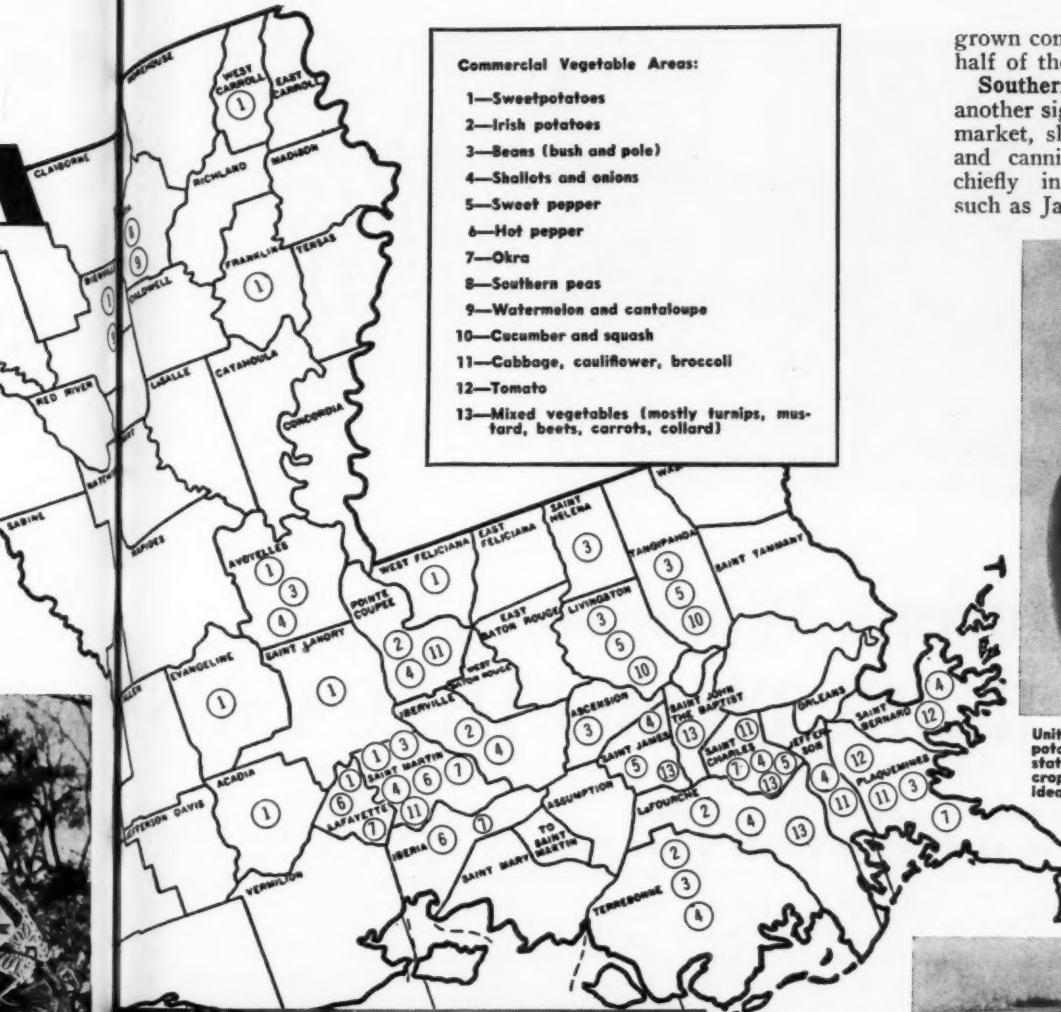
Green Beans: Both bush and pole beans make up an important crop

for fresh shipment and the third important crop for canning and freezing. They are grown in Plaquemines Parish (a county is called a parish in Louisiana), the Hammond area, and St. Martin Parish. Pole beans are grown largely in Plaquemines Parish and to some extent in southern Tangipahoa Parish.

Lima Beans: This crop is grown principally in the New Orleans area for the local market and for home use in other sections. Production is on the increase, primarily for the frozen industry.

Sweet Peppers: Louisiana holds a leading position in the production of sweet pepper. These are grown largely along the Mississippi River in St. James and St. John Parishes, and in the parishes of Tangipahoa

and St. Martin to irrigate. Hot Peppers have been noted in the New Orleans area. In the Lafayette area, Gayenne, principal



Louisiana is one of only a few states that grow shallots in quantity. This field is the Louisiana Pearl variety of shallot.

Trellis on which sweet potato vines have been trained in order to make crosses between varieties at the Louisiana University.

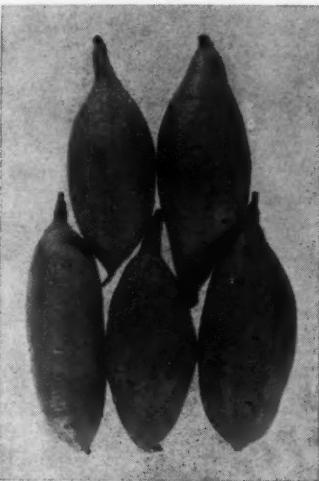
and St. Martin, where it is possible to irrigate the crop.

Hot Pepper: Louisiana has long been noted for its hot pepper condiments. This industry is centered in the New Iberia-St. Martinsville-Lafayette area, which for many years has been the center of production in the United States. The Gayenne, Sport and Tabasco are the principal types grown.

Okra: The gumbo plant produces higher yields in Louisiana than in almost any other state. It makes up Louisiana's second canning and freezing crop, and its popularity for processing is expanding. It is also grown to a large extent for the fresh market. Many of the large soup manufacturers grow okra here, where it is frozen and transported to the manufacturing center. It is

grown commercially in the southern half of the state.

Southern Peas: This makes up another significant crop for the local market, shipment, and for freezing and canning. This crop is grown chiefly in the northern parishes, such as Jackson and Lincoln. How-



Unit 1 Porto Rico variety of sweet potato developed by the Louisiana station comprises 80% of commercial crop grown in South. Photo shows ideal shape for Louisiana sweetpotatoes.



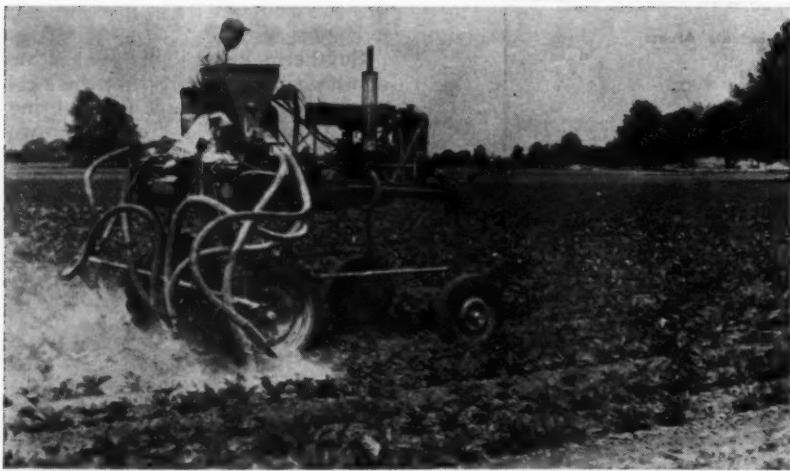
ever, it is grown to some extent in practically every section of the state. Southern peas are particularly prized as a southern food crop during the summer months.

Watermelons and Cantaloupes: These are grown in the sandy pine-land section of the state, principally in Ouachita, Jackson, Lincoln, Bienville and Washington Parishes.

Cucumbers and Squash: Cucumbers and squash are shipped primarily from Tangipahoa Parish and sections in and around New Orleans. The fall crop is grown principally for shipment.

Cabbage, Cauliflower and Broccoli: The local market area for these crops is south of New Orleans and the shipping area for these crops is centered in St. James and St. Mar-

(Continued on page 31)



Al Gerhart, North Ridgeville, Ohio, dusts cauliflower with duster he built. Unit is powered by Ford Model A engine. One drive is direct to the wheels, another goes to a second transmission that operates the duster. In this way duster can be operated independently and at various speeds from ground motion. High clearance permits dusting of tall crops such as sweet corn. Rear bar holding dust hoses is adjustable vertically. Scrap iron makes up bulk of framework. Because it is light in weight the machine does not pack ground.



Five Different Ways to Control INSECTS and DISEASES

Five eastern vegetable growers tell how they control pests to produce top-quality yields

By ELDON S. BANTA

PROFIT-MINDED vegetable growers keep one eye on economy and the other on effectiveness when planning their pest control programs. But they don't cut corners carelessly, you can bet on that!

This was the big lesson we learned from a recent swing through the East in which we visited five topnotch vegetable growers to see for ourselves how they are solving their insect and disease problems.

The Henry Way

Walter D. Henry and Sons, market gardeners of Eden, N.Y., market a fine crop of vegetables from their 300 acres. Sweet corn is an important crop, and corn borer is the big pest. On early varieties and plantings, control begins about June 10 with a 5% DDT dust. Three or four applications follow at intervals of four or five days. Later varieties and plantings are dusted when they get about knee-high, when the borer eggs reach the black head stage. Applications are repeated at five-day intervals until three or four applications are on. This program has also held corn earworm in check.

Tomatoes on the Henry farms are sprayed rather than dusted, and the chief problems are diseases. Early

blight is controlled with Zerlate and late blight with a Bordeaux or a 7% copper spray. So far these materials have not given the Henrys satisfactory control of anthracnose.

The first spray is applied about June 15 with repeat applications every 10 days until five or six have been applied. The first two are Zerlate sprays, the third Bordeaux, and the fourth Zerlate.

If late blight is found in the field at the time of the fourth spray, Bordeaux is again used. The fifth application is Bordeaux. Any later sprays depend upon weather and disease incidence.

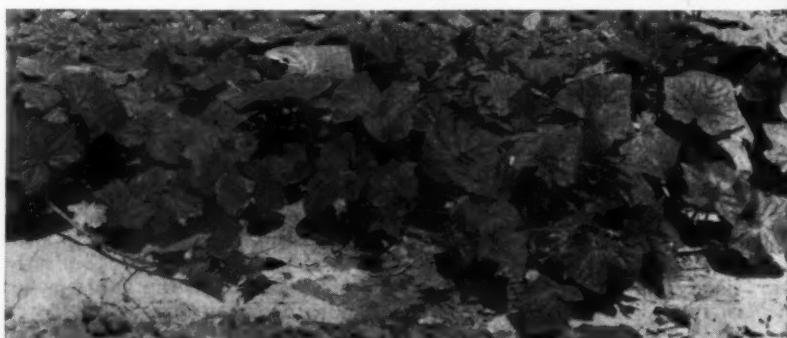
Cucumber beetles are controlled with a 1% parathion dust. First application goes on when the first cotyl-

edon leaves open, and is repeated every five to seven days until beetles and other insects are no longer a problem. Anthracnose is controlled fairly well by applications of a 7% Zerlate dust beginning when plants first start to vine. Leaf blight is controlled by including a 7% copper dust with the Zerlate and parathion. Spotted mildew, a problem for many years, still defies complete control. The Henrys are trying Mildex and it looks quite promising.

Aphids on peppers have been successfully controlled by dusting as soon as they appear with a 1% parathion dust. The important step is to dust at the first sign of aphids.

The Adams Way

In the Hudson Valley east of Poughkeepsie, N.Y. Ralph Adams and Sons
(Continued on page 28)



Cucumbers that have a good control program produce vigorous vines like these and heavy crops.

AMERICAN VEGETABLE GROWER

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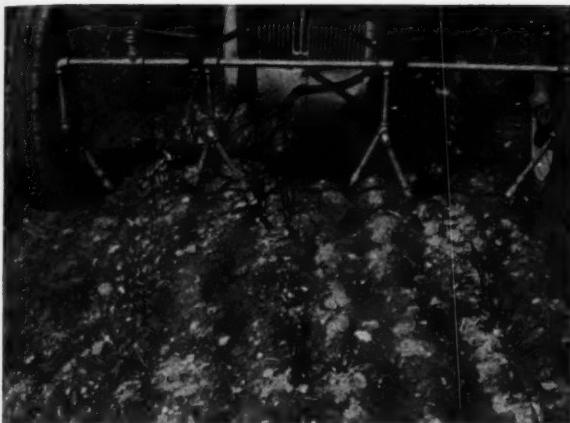
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Precision spraying equipment is almost a necessity for effective onion weed control. Boom built by John Youngs, Glen Head, Long Island, N.Y., has two nozzles per row which direct spray onto soil.



Unsprayed row at left presents a real hand weeding problem. Chickweed-free rows at right on Arthur and John Youngs' farm at Glen Head, L.I., received two 2-quart applications of Chlora IPC.

HOW TO KILL 20 MILLION WEEDS AN HOUR!

The new chemical weed killers are safe, quick, cheap, and easy to use—but go slow and follow directions

By NORMAN J. SMITH

Associate County Agricultural Agent,
Nassau County, New York

JUST ten years ago, if you had told your neighbors that your 14-year-old son could kill 20 million weeds an hour in a growing crop for 50 cents (the cost of 1 pint of 2, 4-D), they would probably have thought you were crazy.

To do a bit of quick figuring, a 20-foot boom sprayer operating at 4 miles per hour will spray 10 acres of corn an hour. Fifty weeds per square foot (a mild infestation) multiplied by 400,000 square feet equals 20 million weeds.

Chemical weed killers kill weeds easier, faster, cheaper, with rare crop damage, if used correctly, than other methods usually employed. A weed killer which doesn't meet these specifications soon passes out of use.

Let's review the weed killers that we have, by crops.

Asparagus: C. M. U. at the rate of 2 pounds in 50 gallons of water per acre, before the cutting season, and 2 pounds immediately after the cutting season, kills most broad-leaved weeds and grasses.

Beans: Sinox PE and Dow Premerge, one gallon in 30 to 50 gallons of water a few days before the beans

emerge, gives excellent control of broad-leaved weeds, and fair control of grasses.

Beets: Sodium chloride (salt) at 400 pounds in 200 gallons of water per acre applied when the beets have three to five true leaves. Purslane and lamb's-quarters are not controlled. There is room for a more effective weed killer on beets.

Carrots, Parsley, Parsnip, Fennel, and Dill: Stoddard Solvent, at 60 to 80 gallons per acre, kills most all weeds except ragweed. This weed

killer probably sold more vegetable growers on chemical weed killing than any other chemical. However, lower-cost materials would be welcomed for these crops.

Celery: In seedbeds only-Stoddard Solvent, 60 to 80 gallons per acre. Celery with "true" leaves can be injured.

Onions: Using potassium cyanate to control the weeds in onions has been an uphill fight from the beginning. Questions which faced the
(Continued on page 34)



Author stands in unsprayed mustard strip in Madison County, N.Y., oat sprayed with $\frac{1}{4}$ pound of 2,4-D when oats were 4 inches tall.

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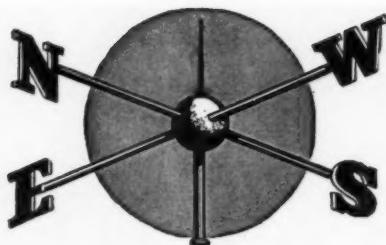
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NEWS

• Illinois Growers Form Co-operative-for-Profit

• Onion Hybrids and New Sweet Corn Varieties "on Trial" in New York

Co-operative-for-Profit

ILLINOIS—Vegetable growers of north Cook County announced formation of the Arlington Valley Growers Co-operative-for-Profit organization, and will file application for incorporation.

The growers' organization plans to issue 1000 shares of common voting stock having \$100 par value. Fifty charter members represent in excess of 2000 acres of vegetable production having an estimated value of \$1,250,000.

This is the first fresh vegetable co-operative-for-profit organization in Illinois, states William F. Lomasney, marketing specialist, University of Illinois Agricul-

ALLERGIC VEGETABLES

Sweet corn roots plowed under are toxic to tomatoes, lettuce, and onions, experiments at the University of Connecticut indicate. Plants become stunted with sickly root systems. By the time the soil warms up, the allergy causative agent is dissipated. Late-planted vegetables, such as beans, melons, and fall cabbage, do all right. Unfortunately, the allergy does not affect purslane, a weed that seems to thrive following sweet corn.—Mrs. W. E. Griffith.

tural Extension Service. It is following the pattern of marketing organization work in heavily populated areas to bring about more orderly marketing, and to improve the growers' position in a more heavily integrated market.

The consumer will also benefit, because of this co-operative effort by getting fresher vegetables with a higher vitamin content than was possible when each grower packed and sold his own produce. The cost of pre-cooling, grading, and packaging equipment is so great that small growers—and they are in the majority in this area—were unable to offer vegetables in the best possible condition.

During 1956 the Arlington Valley Growers will grow and handle sweet corn, squash, parsnips, carrots, peppers, pumpkins, curly parsley, red and green cabbage, cucumbers, onions and onion sets, green onions, red beets, and turnips.

Earlier this month many of the vegetable growers who produce contract tomatoes for Campbell Soup Co. agreed to be represented by the Cook County Truck Gardeners & Farmers Association, for purposes of contract negotiations with the firm. Campbell officials agreed to recognize the organization and will consult with it in drafting next year's tomato contracts.—Elmer J. Steil, Assistant Sec'y, Des Plaines.

Interested in Chips?

OHIO—One out of every eight bushels of potatoes goes into the making of chips.

In a pamphlet issued by the National Potato Chip Institute, Dr. Ora Smith, research director, spells out the varieties which produce best for chipping. He cites the chippers' need for a potato well ma-

C7 LETTUCE AT MONACO

Taking advantage of a golden opportunity to get added consumer attention, C7 lettuce, a product of California and Arizona growers, was one of the sponsors of the CBS on-the-spot short wave rebroadcast of the colorful wedding and marriage of Grace Kelly and Prince Rainier III. C7 lettuce was also provided for the wedding feast; thus it capitalized on that facet of the well-publicized wedding as well.

The "Spring Salad Spree," of which the broadcast was an important part this year, is staged annually by Lettuce, Inc., at the peak of the Phoenix, Ariz., C7 season. This year's "Spree" is pushing C7 lettuce packaged in transparent film.

tured, high in specific gravity, and capable of making a light-colored chip.

Potatoes intended for the chip processor should be planted first as high specific gravity is brought about by maturity.

Copies of the pamphlet, entitled "Don't Get Caught Without Your Plans," are available on request to the institute at 946 Hanna Bldg., Cleveland, Ohio.

Late Spring

WISCONSIN—A late spring means that planting time for the potato crop will be

later than the last few years. Outlook indicated above average precipitation in April.

The value of seed treatment for potatoes and many of the early seeded vegetables will be of extra value under the cooler soil temperatures and higher moisture conditions that are indicated.

Potato growers might seriously consider seed treatment with thiram dust or similar materials. The value of insecticides for treatment of corn, bean, onion, and cucumber seeds along with a fungicide treatment will be good insurance against maggot injury to the seeds or young seedling plants.

We are recommending the use of lindane or dieldrin plus arasan on sweet corn and vine crop seeds; dieldrin, aldrin, or heptachlor plus arasan on onion seed; and lindane or dieldrin plus Spergon on bean seed to protect against maggot and wireworm injury and "damping-off."

The 1956 annual Wisconsin Potato Tour takes place July 24-27. Highlights will be visits to potato fields, machinery displays, annual golf tournament, and a day at the Spooner Branch Experiment Station.—John A. Schoenemann, Ext. Hort., Madison.

(Continued on page 16)

Know Your... VEGETABLE SEEDS

By VICTOR R. BOSWELL
U. S. Department of Agriculture

OKRA

SEED of okra is a true seed that develops in the okra pod, a fruit called a capsule. As it matures this many-called pod becomes very fibrous and woody and then splits open along the length of each of the several long cells that contain the seeds. Under magnification the seed coat pattern of okra is rather pretty. Okra is an annual plant that is related to cotton and to the ornamental Hibiscus.

Growers and consumers outside the South may be surprised at the extent to which okra is grown. No dependable figures are available on the crop grown for food, but figures on seed supplies may give a hint. Eight pounds of seed is enough to plant an acre. About 1,100 to 1,200 acres was grown for seed in 1953 and 1954, respectively. Production amounted to some 340,000 and 590,000 pounds, or average yields of 300 and 500 pounds.

For many years thousands of tons of okra has been grown annually in the South for packing in brine and ultimate use in canned soups and related products. Only limited amounts are shipped fresh, but it is being quick-frozen to an increasing extent. Okra is grown almost universally in the South in home gardens. A large share of the seed surely goes to the amateur trade.

Okra seed has a relatively high oil content and has been considered for culture as



a source of edible oil. In contrast to many oily seeds, okra seed retains its viability for a long time under a wide range of storage conditions and is one of the best-keeping vegetable seeds. It presents no difficult problem at any stage of its production, recovery, or use for planting purposes.

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Polyethylene film can help **Control costly mite infestation**

Large sheets of film made from BAKELITE Brand Polyethylene serve as fumigant barriers in the control of mites in the high-producing strawberry district of Watsonville, Calif. Resistant to weather, these polyethylene sheets are spread over the strawberry beds to contain the fumigant and hold it in contact with the plants during the period of fumigation.

Unaffected by most chemicals, flexible, and light in weight, the polyethylene film provides easy handling and does not flatten the plants over which it is spread. The same type of polyethylene film can also be used for a very effective mulch cloth.

Learn more about how film made of BAKELITE Polyethylene can help you on the farm—and in the market place as packaging for your produce. Write Dept. NS-66.

DID YOU KNOW: Pipe made of BAKELITE Polyethylene provides a new, easy, low-cost way to the finest farm water system. Pipe is easy to install with simple tools.



"Visqueen" film used in fumigating strawberries on the Tom Nakase farm was made by **The Vis-king Corp.**, Terre Haute, Ind., and fabricated by **Neil MacLean Co., Inc.**, San Francisco, Calif.

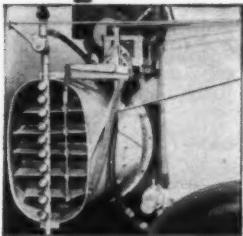


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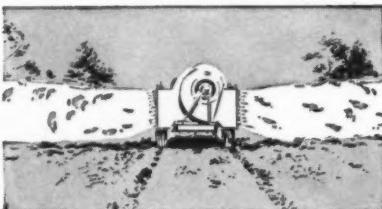
Concentrate Sprayer: two-way discharge, 22,000 cubic feet of air per minute from each side, 60 MPH. High pressure, abrasive and corrosive-resistant, 20 GPM Myers piston pump. Easy-to-reach, positive controls.

Myers Air-Blast



Blower Attachment: 29" vaneaxial fan powered by air-cooled, 4-cylinder gasoline engine delivers 16,500 cubic feet of air per minute at 90 MPH. Readily adapts any Myers dilute sprayer to an effective concentrate rig. All controls can be reached from the tractor seat.

Field-Crop Sprayers



Two-way spray pattern produced by Myers 45,000 CFM field-crop, air-blast sprayers covers 80-foot spray swath. Turbulent roll of uniform air pattern assures complete coverage quickly and efficiently.

Deliver More Air



The combination of Myers high-pressure spray pump and long-lasting ceramic discs, provides ideal droplet size for concentrate spraying. The high-volume, high-velocity air stream saturated with man-made fog coming from spray nozzles, displaces the air around plants; covers leaves, fruit and twigs with uniform droplets of spray material.

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Write today for the name
of your  Sprayer Dealer

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IN CANADA: THE F. E. MYERS & BRO. CO. (Canada) LTD., Kitchener, Ont.

STATE NEWS

(Continued from page 14)

Vegetable Testing Program

NEW YORK—The vegetable variety testing program for 1956 has been set up to include tests both at Ithaca and in various counties. At Ithaca preliminary screening trials of most of the newer varieties will be conducted.

It is planned to have a series of sweet corn demonstration plots and a series of onion trials to test some of the newer hybrids. Agents in 12 counties have indicated an interest in the sweet corn trials which will include a dozen of the newer varieties that have looked good in earlier screening trials.

The onion trials will include eight of the newer onion hybrids and will be located in the muck areas of Prattsburg, Elba, Oswego, Canastoga, and Orange County.

In addition there will be a cabbage trial in Cortland County.—P. A. Minges, Dept. of Vegetable Crops, Cornell University, Ithaca.

Trellis Tomato Growers Join Hands

VIRGINIA—Trellis tomato growers in the Cape Charles section have organized the Virginia Trellis Tomato Association, in an effort to improve and standardize marketing of their product.

The Comet variety, which is grown exclusively in this section of the eastern shore, is a smooth, well-shaped, good-shipping tomato and has found wide acceptance in the trade due to its long shelf life at retail level.

Due to the trellis method of growing, very little off grade is produced generally. In the trellis method two rows of pruned plants are tied to a central overhead wire. The tent-shaped row thus formed allows the fruit to mature under the foliage without sun damage.

George Tinkham Sr., who introduced the trellis tomato to Virginia, was elected president of the association. Gilbert Doty is the new vice-president, and Robert Wyatt, secretary-treasurer. The organization represents 100% of the acreage to be produced this year in the area.

Attention! Prospective Queens

NEW JERSEY—Time's running out for prospective Vegetable Queens! Entries in this year's statewide vegetable queen contest must be submitted by June 18, reports James B. Woodford, chairman of the contest committee. Filled-in entry blanks (obtainable from farm organizations) should be sent to Mr. Woodford, Box 121, Riverton. Final judging will be made July 12 in the New Washington Hotel, Mount Holly.

Candidates must be 17 to 23 years of age and daughters of New Jersey vegetable growers. Top prize: \$100 and a \$150 wardrobe.

The committee is making a special study of ways for the queen to represent the state's vegetable growers and processors at public appearances throughout the year. Among other queenly attributes, the successful candidates must have poise and speaking ability.

More Tomatoes!

CALIFORNIA—There are 138,000 acres of tomatoes under contract this year as compared with 115,000 acres last year, estimates Howard Wilson, California Tomato Growers Association manager. Wholesalers' stock of canned tomatoes are sold and retailers' shelves are expected to be empty by harvesttime.

Vernon Glidden, superintendent for the Campbell Soup Company plant at Sacramento.

(Continued on page 18)

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Chomp, chomp, chomp the bugs are marching...

It's Spring again. And Colorado potato beetles, grasshoppers, cabbage loopers, onion thrips and other vegetable foliage destroyers are on the march. You can stop these pests—quickly and economically—with long-lasting dieldrin.

Dieldrin gives long residual

action. Long after application, it continues to give effective kill of foliage pests. Dieldrin is easy to use as a dust or spray. And dieldrin is economical, too. Mere ounces per acre provide dependable control.

This season be sure that foliage pests do not ruin your crops; steal

your hard-earned profits. Start the season off with an effective control program by applying dieldrin early . . . on the *crops* specified, in the *amounts* specified, and at the *times* specified. Dieldrin is available under well-known brand names from your insecticide dealer. See him today!

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AGRICULTURAL CHEMICAL SALES DIVISION
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New for '56 two new models with Stainless Steel Tanks

For Spraying Dilute, Semi-Concentrates or Concentrates

The 200 Gallon Stainless Streamliner

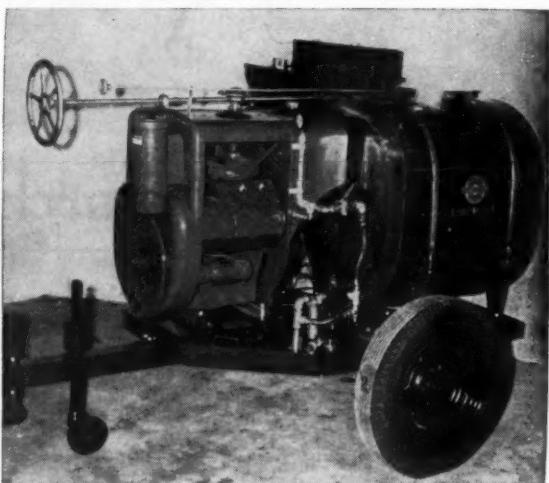


7½ G.P.M. Diaphragm Pump or
30 G.P.M. Roller Pump

The new "Stainless Steel Streamliner" with a 200 gallon stainless steel tank will give years of trouble free service at LOW initial cost. "ONE MAN OPERATION", light in weight (Less than 2000 lbs.). This combination dilute, semi-concentrate and concentrate sprayer is acclaimed as the outstanding sprayer of 1956. Other features include dual purpose for both orchards and row crops, adjustable axle as to height and width, and a choice of two special pumps for either dilute or high concentrate application.

The 100 Gallon Combination Buffalo Turbine Sprayer and Duster

Light enough to be handled on "Hilly" ground with the SMALLEST TRACTOR or A "JEEP"



Large enough for the big grower and small enough for the small grower. The "Buffalo Turbine" combination Sprayer and Duster comes with a stainless steel 100 gallon tank, skid or trailer mounted. Designed for orchard or row crop spraying or dusting.

SPRAYS dilute, semi-concentrates or concentrate mixtures
DUSTS micronized chemicals, regular dusts or pellet baits
DISTRIBUTES Pellet or Granular insecticides or fertilizers

BUFFALO TURBINE
AGRICULTURAL EQUIPMENT CO.
INC.
GOWANDA, NEW YORK

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Brochure and Literature

A Few Choice Territories
Open. Dealer-Distributor
Inquiries Invited.

STATE NEWS

(Continued from page 16)

mento, declared that his firm contracted for only 7% more than normal, but that canners have each signed a little more than normal, thus accounting for the increased acreage.—Neale Leslie



Photo courtesy Palm Beach (Fla.) Post-Times
Florida cucumber growers Jake Hammock (left) and Louis Alexander (right) discuss a three-week-old cucumber planting with Assistant Palm Beach County Agent John H. Causey. Cukes are planted in single beds with sunflower or sugar cane serving as windbreaks between every third bed. Hammock and Alexander grow squash, tomatoes, and cucumbers in partnership operations near Lake Park.

Ornamentals Carry Virus

OREGON—Greenhouse research by J. A. Milbrath and Roy Young, Oregon plant pathologists, has shown that Daphne odora from 48 different collections contained either cucumbers mosaic virus, alfalfa mosaic virus, or both—proving that cucumbers and the fragrant and beautiful Daphne odora do not go hand in hand.

Daphnes serve as intermediate hosts in the same fashion that wild gooseberries and currants serve as hosts for the wheat stem rust.

Daphnes isn't the only ornamental known to carry viruses that infect food crops. Dahlias carry a virus known to infect tomato plants, as will flowering tobacco. Serious losses in commercial bean and cucumber fields have occasionally been traced directly to infection from gladiolus fields.

The idea is, say the pathologists, to keep these "poison-to-one-another" plants apart.—Harold and Lillie Larsen.

Irrigation in the East

PENNSYLVANIA—In the East, where rainfall is relatively heavy, irrigation should be only an auxiliary method to supply moisture, rather than the mainstay, Dr. Philip Minges, vegetable crops specialist at Cornell University, told a recent meeting of the Pennsylvania Vegetable Growers Association.

He said best yields and quality are obtained when plants have adequate moisture throughout the growing season, but warned against applying too much moisture.

No two farms can be irrigated in exactly the same pattern, Minges said. Type of soil, depth of soil, rooting habit of crops, and stages of plant growth, all need to be considered. He emphasized that in drought periods irrigation is the only solution.

This statement got full assent from Joseph Klock, Easton sweet corn grower, who said that irrigation last year saved him from a repetition of an almost complete crop failure in 1954 because of drought.

Klock cautioned growers to make a careful study of their irrigation needs and of different irrigation systems before they invest in "man-made rainfall."—N. M. Eberly, Agri'l Editorial Dept., University Park.

AMERICAN VEGETABLE GROWER

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CALENDAR OF COMING MEETINGS AND EXHIBITS

May 18—Ohio Agricultural Experiment Station Greenhouse Vegetable Day, Wooster.—E. C. Wittmeyer, Dept. of Hort., Columbus 10.

June 14-16—Idaho Shippers Association (including Malheur County, Ore.) annual summer convention, Sun Valley.—Edd Moore, Exec. Sec'y, P. O. Box 1100, Idaho Falls.

June 27-29—South Dakota State Horticultural Society annual meeting, in conjunction with South Dakota Federation of Garden Clubs, Brookings.—W. A. Simmons, Sec'y, Sioux Falls.

July 24-27—Annual Wisconsin Potato Tour. Field days: July 24, Waupaca area. July 25, Stevens Point area. July 26, Antigo area and Langlade County. July 27, Spooner area.—John A. Schoenemann, University of Wisconsin, Madison.

July 28-August 4—Eighth annual National Vegetable Week sponsored by the VGAA.

Aug. 1-Sept. 12—Vegetable Growers Association of America, second Grand Tour of Europe visiting England, Norway, Sweden, Denmark, Holland, Germany, Switzerland, and France. Tour conducted by Walter F. Pretzer, Jr., American Express Company, 1425 Euclid Ave., Cleveland 15, Ohio.

Aug. 11—Illinois State Vegetable Growers Field Day, University of Illinois, Urbana.—N. F. Oehker, 208 Vegetable Crops Bldg., U. of Illinois, Urbana.

Aug. 14-15—Ohio Pesticide Institute summer meeting and tour, Wooster.—J. D. Wilson, Sec'y, Wooster.

Sept. 7-8—Cornell Variety Field Days. Sept. 7, Variety trials at Ithaca. Sept. 8, Geneva Experiment Station and Robson Seed Farms.—P. A. Minges, Cornell University, Ithaca.

Sept. 23-26—Produce Packaging Association, 6th Annual Conference & Exposition, Hotel Fontainebleau, Miami Beach, Fla.—Robert A. Cooper, Exec. Sec'y, 500 Fifth Ave., New York, N. Y.

Sept. 27-29—Florida Fresh Fruit and Vegetable Association annual meeting, Hotel Fontainebleau, Miami Beach.—Geo. Talbott, 4401 E. Colonial Dr., Orlando.

Oct. 31-Nov. 1—Wisconsin State Potato Show and annual meeting Wisconsin Potato Growers Association, Antigo.—Harold R. Simmons, Exec. Sec'y, Box 22, Antigo.

Nov. 1-2—Western Growers Association 31st annual convention, Sheraton-Palace Hotel, San Francisco, Calif.—Headquarters 606 S. Hill St., Los Angeles.

Nov. 28-30—Vegetable Growers Association of America, 48th annual convention, Grand Rapids, Mich.—Joseph S. Shelly, Sec'y, 528 Mills Bldg., 17th and Pennsylvania Ave. N.W., Washington 6, D.C.

Jan. 28-31, 1957—United Fresh Fruit and Vegetable Association, Benjamin Franklin Hotel, Philadelphia.—Association headquarters, 777 14th St. N.W., Washington 5, D.C.

CUCUMBER MANUAL

MORE than 50 cucumber varieties are described and pictured in the new edition of "Descriptive Reference Manual of Cucumbers," published by Lawrence Robinson & Sons, breeders and growers of vine seeds.

Also included in the manual is a guide to cucumber insect and disease control, and a page for your personal field notes. Write to Lawrence Robinson & Sons, Modesto, Calif., for your free copy.

MAY, 1956

You can install your own irrigation system with USS NATIONAL* PLASTIC PIPE



*TRADE-MARK

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• Installing irrigation lines and sprinkler systems with lightweight polyethylene USS NATIONAL Plastic Pipe can be a one-man job. You can carry it anywhere—a 200-foot coil of two-inch National Plastic Pipe weighs only 86 pounds. It's easy to cut, and the fittings are of the insert type, quickly secured with stainless steel clamps. No adhesive necessary.

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UNITED STATES STEEL

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All books sent postpaid on receipt of check or money order

AMERICAN VEGETABLE GROWER

Willoughby, Ohio



Okra plant on farm of Orien Horn, Searcy, Ark. Plants grow, flower, and fruit from June to September, are at peak the first two weeks of August. Pods are picked six days after blooming.

OKRA . . . The Gumbo Plant

OKRA, a native of Africa, came to America around 1748, but only in the last 30 years has it attained commercial importance. Now okra is grown throughout the South, and is a basic ingredient of southern Creole dishes such as gumbo soup.

One of the largest centers of production is around Cairo, Ga., where some 6000 acres are grown annually. The bulk of the crop goes to the Campbell Soup Company's processing plant, the remainder to fresh market. Around Searcy, Ark., the Birds Eye freezing plant has some 1100 acres under contract.

Okra thrives in warm, humid climates, preferably where temperatures go above 85° F. It responds to plenty of water, but will endure drought quite well. The plants also respond to heavy fertilization.

Applications of 1000 to 1500 pounds of 8-8-8 per acre are suggested by C. D. Spivey, okra specialist at Georgia's Attapulgus Field



Harvesting okra from the Orien Horn planting at Searcy, Ark. Pods are snapped from the plants by hand. Pickers wear gloves to protect hands from stinging resulting from contact with pods.

AMERICAN VEGETABLE GROWER

Station. In before side-dress

Okra Searcy, Ark. 3-9-27 per bring his duction h 2 tons of pounds o acre. He 4 tons of the year b a cover c His yield county.

Planted

Okra is Seed is s 3½ feet a pounds per ton, or be rows 5 ft spaced 20 shallow cr

Disease major pes damping-off weather is

Fusari in many should be or main bruised a for the fu

Nematic knot spec hazard in If a field the soil s planting w tode killi ing okra resistant

Harvest

Harves after plan peak dur August. C ing is ess yields. I plants, g greatly n picked at Pods are into soups bloom.

Varieties production processing Emerald Campbell widely gtain their ties, altho mands the Clemson Long Po Hastings

MAY, 1956

Station. Half the fertilizer is disked in before planting; the remainder is side-dressed about six weeks later.

Okra grower Orien Horn, of Searcy, Ark., applies 200 pounds of 3-9-27 per acre before planting. To bring his soil up to good okra production he supplemented this with 2 tons of ground limestone and 300 pounds of 20% superphosphate per acre. He also applied between 3 to 4 tons of poultry manure per acre the year before, after plowing under a cover crop of Kentucky 31 fescue. His yields have been the best in the county.

Planted in Spring

Okra is planted about April 15. Seed is sown an inch deep in rows 3½ feet apart at the rate of 4 to 5 pounds per acre, using a corn, cotton, or bean planter. Horn likes his rows 5 feet apart and his plants spaced 20 to 24 inches apart. Early, shallow cultivation is essential.

Diseases and nematodes are the major pests. In early seedling stages damping-off is often a problem if the weather is hot and humid.

Fusarium wilt is a major disease in many stages of growth. Care should be taken not to bruise stalks or main roots in cultivating, as bruised areas make places of entry for the fusarium fungus.

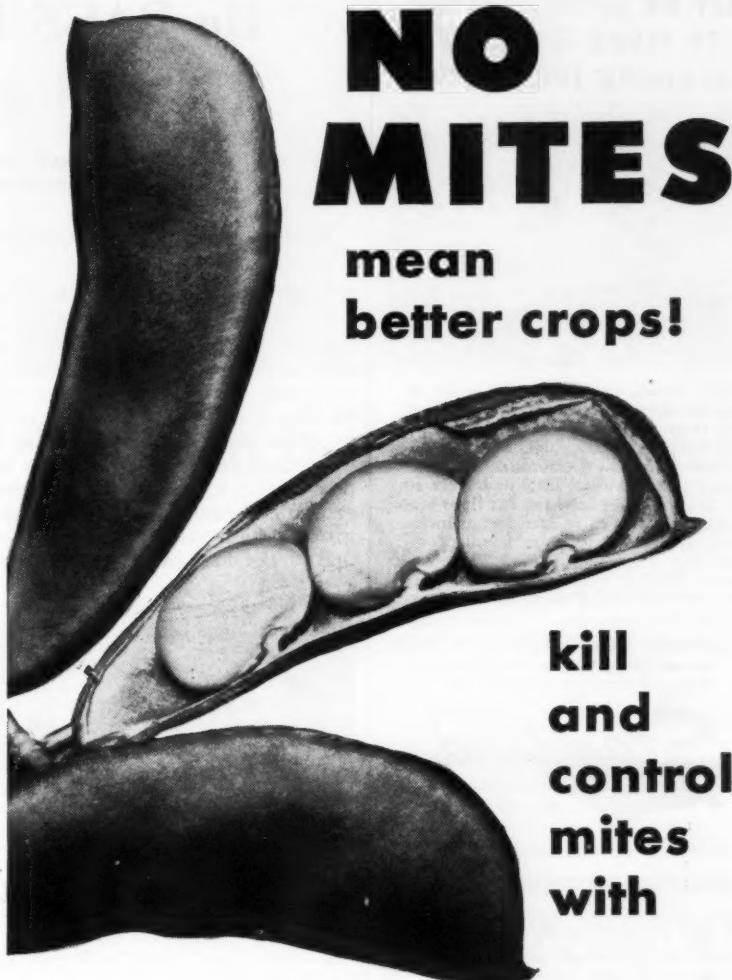
Nematodes, especially the root-knot species, make okra growing a hazard in many parts of the South. If a field is known to be infested, the soil should be fumigated before planting with one of the new nematode killers. The practice of growing okra in rotation with nematode-resistant crops is desirable.

Harvest 60 Days Later

Harvest begins about 60 days after planting, and the crop is at its peak during the first two weeks of August. Careful, consistent harvesting is essential to obtain the highest yields. If old pods are left on the plants, growth stops and yields are greatly reduced. Pods should be picked at least three times a week. Pods are most suitable for processing into soups and gumbo six days after bloom.

Varieties vary with the area of production and the market. For processing in south Georgia, the Emerald variety developed by the Campbell Soup Company is most widely grown. The round pods retain their shape better after processing than do the star-shaped varieties, although the fresh market demands the latter. Other varieties are Clemson Spineless, Dwarf Green Long Pod, Louisiana Green Velvet, Hastings Dwarf.

THE END.



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He BAGS His Carrots . . . and Regains Market

New England grower prepackages top-quality product under brand name

By CHARLES L. STRATTON

CARROT grower Frank Palumbo, of Concord, Mass., has done a lot toward saving the New England market for New England growers.

Buyers haven't been too receptive to New England carrots due to the excellent quality of carrots from the West and the uneven bunches and poor quality sometimes put up by local growers. Palumbo, who specializes in growing high-quality carrots and was one of the first carrot packers in



Carrots fresh from the washer (rear) are ready for grading and packaging in polyethylene bags under Palumbo's well-known Blue Ribbon label.

the East, has revitalized the local carrot market.

Each year he seeds some 50 acres of carrots in order to grow a uniform supply of tender, young carrots which he markets under his own Blue Ribbon label from about July 20 until the first week in November.

He doesn't use winter rye for early carrots as it takes too long to deteriorate. He likes to use 5-10-10, a ton to the acre. The ground is plowed, harrowed, then a three-quarter ton application of 5-10-10 to the acre is harrowed in and the ground is plowed again. He likes the ground loose and doesn't harrow again. The soil is broken up into beds and he allows 9 to 12 inches between the rows. The final application of fertilizer is applied and mixed with the soil and a four-row Model 300 Planet Jr. is used in the seeding.

Palumbo plants both the Hutchinson and the Imperator varieties. He claims the Hutchinson makes a nice early and a late carrot and is not as susceptible to blight. He uses the Imperator as a midseason carrot.

Carrots are planted as early as possible in the spring with the last planting before July 20. He plants a field at a time, whether it is a fraction of

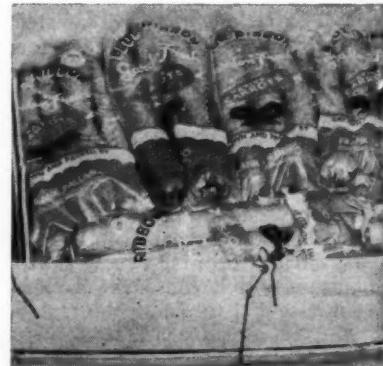
an acre or several acres. His land is a rather sandy bottom loam. Hard ground, he claims, will produce misshapen carrots.

The only sidedressing Palumbo uses is nitrate and that only if necessary. A practice which he recommends to all growers is constant soil testing. "If rain washes the soil away," he says, "a soil test will tell right away where you stand and what the soil needs for the crop."

He uses chemical weed control, applying Salval No. 5 according to directions, when the carrots get their true leaves. He prefers cooler weather for application as he finds there is not so much danger to plants then.

His entire program is based on producing an exceptionally nice line of carrots. One of his secrets is to seed thickly in order to get a slender carrot. No thinning is done in his fields as he prefers carrots with a diameter of three-quarters of an inch and less.

His prepackaging shed is a neat building in the center of a carrot field. The washer and packaging layout was



Blue Ribbon carrots — 25 bags to the crate — await shipment to broker. Boxes are iced on request of the buyer to insure crispness.

designed by a local concern (Larchmont Farms Co., Lexington, Mass.). Carrots are dumped directly into the hopper of a mechanical conveyor and moved up into the washer where they are given a thorough washing with cold artesian well water. The washer sides are constructed so the wind does not blow the water.

The carrots are spotless when they come out of the washer onto the table where they are sized and packed in polyethylene bags bearing Palumbo's Blue Ribbon trade name and his name and address.

THE END.

AMERICAN VEGETABLE GROWER

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MAY, 1954



This combination display of one- and two-pound polyethylene bags of carrots produced largest sales in study of bagged and bunched carrot sales.

How To "Bag" Carrot Sales

THE switch from bunched to bagged carrots hit the carrot industry with dramatic suddenness. But now that we are used to the idea of marketing carrots in bags, some growers and retailers are wondering what the effect has been on carrot sales.

Results of a sales experiment indicate that bagging carrots may have helped sales. This study was conducted by Pennsylvania State University and the USDA in 12 supermarkets of the Kroger Company in Pittsburgh during four test weeks from April 4 through May 7, 1955.

Methods of Display

The methods of display were:

- 1) One-pound bunches priced in units of two.
- 2) One-pound polyethylene bags with a two-unit price four cents less than bunches.
- 3) A combination display of one- and two-pound polyethylene bags with the two-pound bag priced two cents less than two one-pound bags.
- 4) A combination display of one-pound polyethylene bags and one-pound bunches priced as in 1 and 2.

The largest sales were obtained from the combination display of one- and two-pound polyethylene bags. Average sales from this display amounted to 7.3 pounds of carrots per 100 customers. This was more than one-third larger than sales from the least effective display of one-pound bunches which sold 5.6 pounds per 100 customers.

Sales amounted to 6.9 pounds per 100 customers from the combination display of one-pound polyethylene bags and one-pound bunches, and 6.6 pounds per 100 customers from the display of one-pound polyethylene bags.—W. A. Lee, Penn State U.

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MAY, 1956



TAWCO Leaf Crop Harvester

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Turnip Greens
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Works equally well on trench irrigated crops or flat planting. Growers producing for canning or freezing find Tawco Harvester recovers much higher percentage of usable foliage than larger, more costly machines. Any grower of size quickly pays for Tawco Leaf Crop Harvester out of labor and crop savings affected.

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Has won wide acceptance since introduction in 1954. Operates on similar principle to Leaf Crop Harvester except that root is recovered and tops are discarded. One large grower with nine machines harvests 15 acres a day. He replaced 160 field and packing shed employees with nine workers—paid for his machines from a few days' savings in labor costs.

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Vegetable Harvester Division

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PROFITABLE ROADSIDE MARKETING

By R. B. Donaldson
and W. F. Johnstone

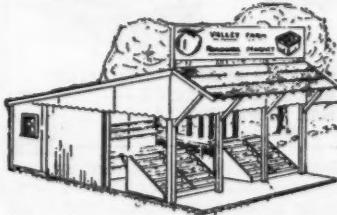
A practical handbook for the successful operation of a roadside market. It is the result of many years' study of "on-the-farm" marketing in all parts of the country by two experts in the field.

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Willoughby, Ohio

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of the harvest!**



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SOIL INSECTICIDES . . . Your Underground Partner!

Irish potato and sweetpotato growers have found a strong ally in the war against soil insects

By D. E. GREENWOOD and R. N. HOFMASTER

Virginia Truck Experiment Station

SOIL insecticides are effective primarily against wireworms, grubs, and similar insect forms which live exclusively in the soil and do most of their damage to underground portions of plants. In fact wireworms, more than any other single pest, were largely responsible for the development of modern soil insecticides because of the tremendous losses they inflicted on root and transplant crops at a time when effective and practical control methods did not exist.

Wireworms are now effectively controlled, in most soil types, by the application of from 2 to 3 pounds of aldrin or heptachlor per acre.

Zone of Activity

Wireworms are slender, hard-shelled, amber colored worms. Actually, they are the young or immature form of "click beetles." During the winter wireworms go down below the frost line; in the spring they move up to the surface foot of soil and remain there for greater part of the growing season. Once in this zone, their lateral movements (except for a certain amount of aimless wandering) are in response to a search for food.

Soil insecticides applied broadcast and worked into the top 5 or 6 inches of soil thus assure an almost continuous period of contact between the wireworms and the material used, whether the worms are actively feeding or not. As most of the vulnerable plant parts are also contained within this soil zone, control is usually



Flea beetles in untreated Irish potato plot at foreground have completely defoliated plants; treated plots at rear (aldrin) and right (heptachlor) have good foliage, show no damage from flea beetles.

achieved before the worms can inflict much damage.

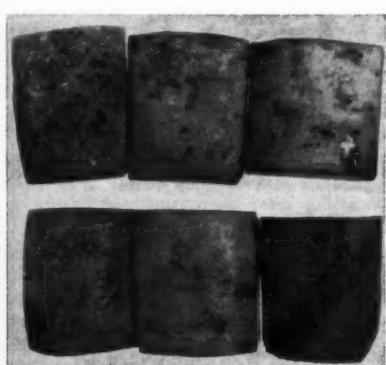
Potatoes Down-graded

Irish potatoes and sweetpotatoes developing in untreated, infested soils are subject to intermittent periods of intensive wireworm feeding. While the familiar feeding holes, as shown in the roots of sweetpotato, do not greatly impair the quality of the roots or tubers, they down-grade them, with a proportionate loss to the grower.

In a recent test with Irish potatoes, in which aldrin or heptachlor had been applied broadcast at the rate of from 2 to 3 pounds per acre, the treated areas averaged less than .01% injury, while the untreated portions of the field averaged close to 30% injured tubers. This can be considered as a serious infestation because to bring such a field up to grade requirements would necessitate the most rigorous sorting table technique. The cost of the material alone would hardly pay one man's wages for one day at the grading table.

Another serious wireworm problem, though less conspicuous than potatoes full of holes, results from wireworm feeding on sprouting seeds. The seeds are generally hollowed out and the stand thinned, but occasionally the growing point is nipped on a seed that has already sprouted. When such plants come aboveground, they are malformed and useless.

(Continued on page 26)



At top, sweetpotato roots from untreated land infested with wireworms have numerous black feeding holes which down-grade product. Below, typical undamaged roots from plots treated with aldrin or heptachlor at 2 to 3 pounds per acre.

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Stauffer CAPTAN Controls

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On carrots: Septoria, cercospora
On cherries: Leaf brown rot
On cucurbits: Angular leaf spot, anthracnose, downy mildew
On ornamentals: Damp-off
On peaches: Brown rot and peach scab
On potatoes: Early & late blight
On roses: Black spot
On strawberries: Leaf spot and grey mold fruit rot
On tomatoes: Early & late blight, anthracnose, stemphylium

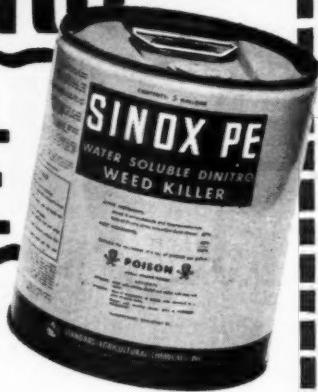
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Scott Viner Company 1224 Kinnear Road Columbus 8, Ohio

**DIGS-
TOPS-
and LOADS
in one
OPERATION**

SOIL INSECTICIDES

(Continued from page 24)

In years past, the only practical means of combating this problem was to continue planting until the wireworms had their fill. The lima bean industry on the West Coast for many years struggled along at great cost because of this type of wireworm injury. Sweet corn planted in infested fields is particularly vulnerable.

Earlier Yields

The value of soil insecticides was clearly demonstrated in conjunction with the potato experiment referred to above. One grower made several plantings of early cucumbers. One planting was made on soil which had been treated for wireworms; the other plantings were made on untreated, infested fields. The plantings on treated soil resulted in a good stand the first time over and was actually yielding pickling cukes at a time when the other fields were just getting established.

The advantages of getting a crop up and into production for those all-important first few days of a good market are obvious. This is particularly true of a high cash crop like pink and green-wrap tomatoes, an up-and-coming industry in Virginia which has run into the problem of wireworms entering the fruits which come in contact with the soil. In such special cases, soil treatment has become almost a routine practice.

Transplant crops such as tomatoes, peppers, and cabbage that are usually started in seedbeds and later transferred to the field, are particularly vulnerable to wireworm feeding, especially if the wireworms have not previously been able to obtain food from a cover crop. Wireworms enter the underground stem and bore up; causing the plants to wilt and die. In fields known to be infested, it is unwise to plant such crops without first having applied a soil insecticide.

Effect on Foliage Feeders

One of the more recent developments in the expanding research on soil insecticides has been their application to problems dealing with pests normally considered as foliage feeders such as the potato fleabeetle. This pest can chew so many holes in potato foliage that the effective leaf area of the plant is reduced to practically nothing and all growth stops.

Since this injury comes after tubers have started to form, the plant foods required for tuber enlargement are not available. Reduction in yield is brought about by a loss in size of tubers, not in their numbers.

The potato fleabeetle is a small, black insect about 1/16 inch in length.

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In Virginia it overwinters in the adult stage and emerges from hibernation in April, just in time to move conveniently onto new potato plantings or other hosts. In early May, the beetles deposit tiny white eggs in the soil at the base of the host plant.

The young fleabeetle larvae which hatch from these eggs feed on underground plant parts, much in the same manner as wireworms; in fact, injury to tubers by the fleabeetle larvae on occasion can be just as severe as wireworm injury.

After development has been completed in the soil, a new generation of adults emerges in early June. This is the generation which can be so destructive to potato foliage and whole fields can be skeletonized within a week. Almost all of the beetles feeding in any given field have developed



EARLY TOMATOES

Charles V. Lamer (left) shows Dr. William Andrew, of Southern Illinois University, a heavily-loaded plant of Big Boy tomatoes on his farm at Cobden, Ill. Lamer fertilizes early tomatoes heavily to get yields of 10 pounds per plant, which is high for his area. He gets 10 to 20 cents a pound for them.

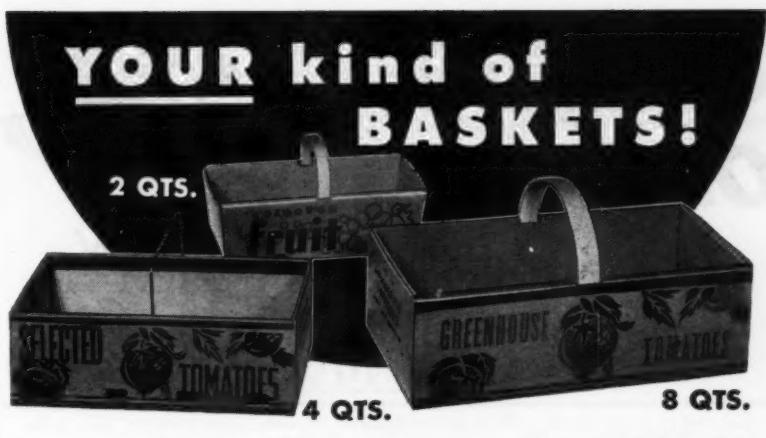
Lamer set his plants early in April with a starter solution to give them an early boost. Just after planting he applied 1200 pounds per acre of 3-12-12 fertilizer. When plants were growing well, 800 pounds of 3-12-12 were applied per acre, with applications made to each plant by hand. Harvest began in June and was over by July 25.—E. S. Banta.

from eggs laid by the overwintering beetles early in the spring.

Tests have shown that 2½ pounds of either aldrin or heptachlor per acre applied to the soil resulted in a 94% decrease in foliage injury by fleabeetles, the practical elimination of tuber damage, and a 75% increase in yield over untreated fields. Four foliage applications of dieldrin, the preferred foliage recommendation, were not significantly better.

Another very important advantage of soil application over foliage application lies in the matter of proper timing. Soil applications are made in the spring before the potato crop is planted and remain effective throughout the entire growing season. Foliage treatments, on the other hand, can be affected by seasonal variation, which means they are often applied after the damage has been done. THE END.

MAY, 1956



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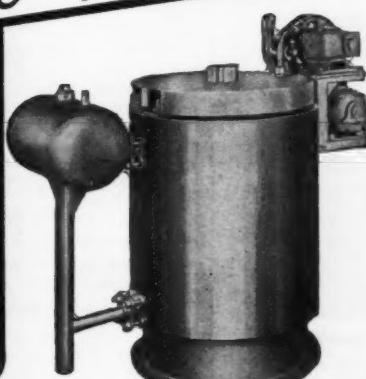
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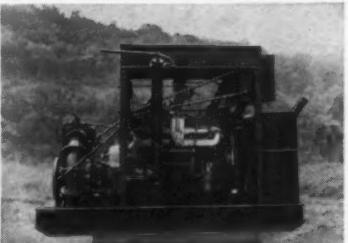
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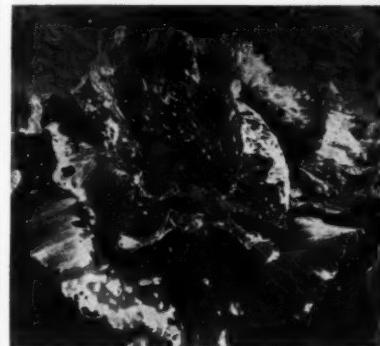
FIVE DIFFERENT WAYS

(Continued from page 12)

grow a variety of vegetables for their roadside market as well as for wholesale. They place quality at the top of their produce requirements, and pest control is a big factor in attaining this.

Muskmelons, one of their prize crops, get a rotenone dust early for control of beetles. Later, when vines begin to run, a spray mixture of parathion and Zerlate is used for control of beetles, blight, anthracnose, and other pests.

Control of tomato and sweet corn pests on the Adams' Fairacre Farms is similar to the Henrys', with a few differences. They begin spraying very early for control of aphids which spread the Stewart's wilt bacteria. For aphid control they use a DDT emulsion applied with a weed sprayer, first just as the corn breaks through



Cabbage with severe damage from cabbage looper, a pest often defying control. Endrin and diazinon are giving good control in some areas.

the ground. Two more applications at five-day intervals are made.

Early tomatoes at Fairacre Farms receive no sprays, as harvest is over before insects and diseases become destructive. Later varieties receive applications of fixed copper and Zerlate. Materials are alternated, with Zerlate in the first spray, copper in the next. Applications are repeated every week or 10 days until four sprays have been applied. This program keeps blights and anthracnose to a minimum.

The Adamses find their Hardie Aero Mist sprayer quite satisfactory for control and apply materials up to 6X concentration. With sweet corn they can cover eight rows at a time, doing a good job much faster than formerly with a boom sprayer.

The Blodgett Way

Stephen W. Blodgett grows 1500 acres of Black Valentine green beans in the lower Hudson Valley near Fishkill, N.Y. Leafhoppers, aphids, and other leaf-feeding insects are

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major problems. Control is satisfactory with dust applications of 1% parathion. Applications are made every five days during wet periods and every seven days when dry and hot, as long as insects are a problem.

The Seabrook Way

At Seabrook, N.J., the Seabrook Farming Corporation grows hundreds of acres of peas and lima beans for their freezing plant, as well as many other vegetables. Airplane application is frequently used in insect and disease control to cover the 50,000 acres quickly. However, for effectiveness of control the folks at Seabrook prefer ground application equipment on most crops.

The duster now in use at Seabrook is the new Hardie model without individual nozzle tubes which covers a swath 32 feet wide. Sprayers are of the boom type made by Oliver Iron Age.

Pea aphid is the major pest on peas, and is controlled very well with one airplane application of 1% parathion dust on about half the acreage. The remainder requires a second application, mostly because of a very fast build-up of aphids, as soon as the peas break through the ground. Root rot has been the only troublesome disease in Seabrook pea fields, and is controlled by crop rotations.

Downy mildew is a problem on lima beans in the East, and at Seabrook Farms control begins with a forecasting method developed by Dr. R. A. Hyre of the USDA, now working at Newark, Del. This method determines the time to begin spraying, which is eight days after mildew is forecast. Applications of copper sprays at seven- to 10-day intervals has kept mildew to a minimum. This year Seabrook growers may switch to one of the newer carbamate materials, for a less costly program.

Insects attacking lima beans are many, but the chief ones are Mexican bean beetle, worms, and recently the two-spotted mite. Beetles are easily controlled with dust or spray applications of 1% parathion, and mites to some extent. This season a new material, Kelthane, is being tried for control of mites. DDT applications are the most economical for control of worms in lima beans.

The Gerhart Way

Al Gerhart, at North Ridgeville, Ohio, grows a variety of vegetables on his 90 acres, mostly for the Cleveland market. Many times he has produced high quality crops when others didn't. One reason is that Gerhart pays strict attention to pest control schedules, and follows what he terms

(Continued on page 30)

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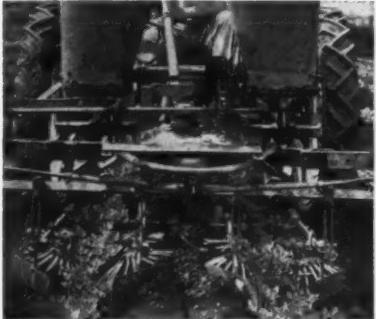
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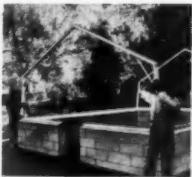
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FIVE DIFFERENT WAYS

(Continued from page 29)

a "preventive program." His dusting schedule often begins before any signs of the pest appear.

Cucumbers are planted early in the spring when weather is often too wet for any field work after planting. So Al rigged a duster on his small crawler tractor and dusts regularly from the time plants break through the soil. He keeps a dust on all the time, making applications after every rain. Sometimes it means dusting every day. Last year when mosaic knocked out many neighboring fields, Gerhart harvested one of his finest and largest crops of cucumbers.

First dusts on cucumbers are with $\frac{3}{4}\%$ rotenone. When the second leaf develops Gerhart switches to a mixture of rotenone and Crag 658, continuing this mixture until about harvesttime. If dusts are necessary near



Muskemelon on farm of Ralph Adams and Sons, Poughkeepsie, N.Y., are on a rotenone-parathion-Zerlate program for insect and disease control.

or during harvest, rotenone alone is used. If mildew becomes a problem in the fall, a mixture of rotenone and 10% Zerlate is used.

Squash get about the same treatment as cucumbers as to frequencies of dust applications. The material is usually rotenone, although purified DDT is sometimes used. Applications are made after every rain, or about every five or six days if no rains occur. Mildex proves a pretty good control for mildew in the fall.

Cabbage and cauliflower are major crops on the Gerhart farms and often present the biggest insect control problems. A dust program begins a week after plants are set in the field and continues at 10-day intervals. Worms and loopers are controlled with a dust mixture of 3% DDT and 1% parathion used at the rate of 35 pounds per acre. If dusts are required late, within 30 days of harvest, then rotenone alone is applied.

This program has failed to control cabbage looper in recent years however. Last year Gerhart tried endrin for control of this pest without much success, then made one application of

(Continued on page 31)

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tin Parishes. This industry is also growing rapidly in Avoyelles Parish. A considerable amount of broccoli is now being grown for the frozen food industry. Locally-grown cabbage can be found on the market from October through June, however, the main shipping month is April. The parishes of St. Martin, Pointe Coupee, Ascension, and St. James comprise the principal areas for this crop.

Tomato: Until a few years ago most of the tomatoes were grown in north Louisiana, but the industry is shifting to several of the south Louisiana parishes, mainly Plaquemines and St. Bernard, and this industry is growing rather rapidly. The crop is being sold to large chain stores and buyers.

Irish Potato: While Irish potatoes have been grown to some extent for a long period of time, World War I stimulated the production of this crop in this state. However, due to a shift to western production areas and new methods of packing, the Louisiana industry has not been as strong in recent years as it was in the early 30's. It is now, however, in a position to go forward since newer, high-yielding varieties like the Red LaSoda have been bred and introduced. It outyields the standard variety, Triumph, by a third to a half, and this industry is now on a forward move.

Sweetpotatoes: For the past 30 years Louisiana has led practically all other states in the production and marketing of this crop. With the introduction of the Porto Rico variety and with the introduction of the Unit I Porto Rico, a mutation of the old type, which has a better copper skin color and a dark orange flesh, it was possible for Louisiana to maintain its leading position.

Today Louisiana ships around 70 per cent of the commercial crop grown in the United States. Ten to fourteen thousand car equivalents are shipped from this state annually, and today almost half of the production is canned or frozen. There are around 25 canners and over 60 shippers in the state.

The sweetpotato industry has grown as the result of being able to supply the growers with the best foundation seed of the Unit I Porto Rico. Since 1937, when the Louisiana station, working in close co-operation with most of the important sweetpotato producing states and the USDA, first induced the sweetpotato to bloom and set seed, many important new varieties have been introduced which are resistant to

diseases and which have a higher nutritional value than some of the standard varieties. While the impact of these new varieties has not been fully felt, the industry is rapidly growing, not only in this state, but in other areas. In Louisiana the principal production areas are St. Landry, Lafayette, Evangeline, Acadia, West Feliciana and West Carroll Parishes.

The Louisiana station maintains a Sweet Potato Research Center which is devoted entirely to the improvement of this crop through breeding and production of foundation seed. This center is located in Franklin Parish at Chase. The Louisiana station not only produces seed for its own breeding program but also furnishes many other cooperators with seed potatoes and true seed.

THE END.

LOUISIANA

(Continued from page 11)

a Sweet Potato Research Center which is devoted entirely to the improvement of this crop through breeding and production of foundation seed. This center is located in Franklin Parish at Chase. The Louisiana station not only produces seed for its own breeding program but also furnishes many other cooperators with seed potatoes and true seed.

THE END.

FIVE DIFFERENT WAYS

(Continued from page 30)

dieldrin dust in August about a month before heading, with good control. Other growers have reported control with endrin.

Control of cabbage maggot on the Gerhart farm is with a 5% dieldrin dust applied directly over the row just after planting and repeated in six days.

Peppers get a dust application of Zerlate and parathion two or three times before bloom. This program has held insects to a minimum.

About the time tomato plants begin to bush up, perhaps three or four weeks after setting, they get their first dust application. This is a mixture of Manzate and Rhothane at the rate of 30 to 35 pounds per acre. This is followed in a week with Manzate alone. In another week this is repeated. A week later the fourth application is made with the Manzate-Rhothane mixture.

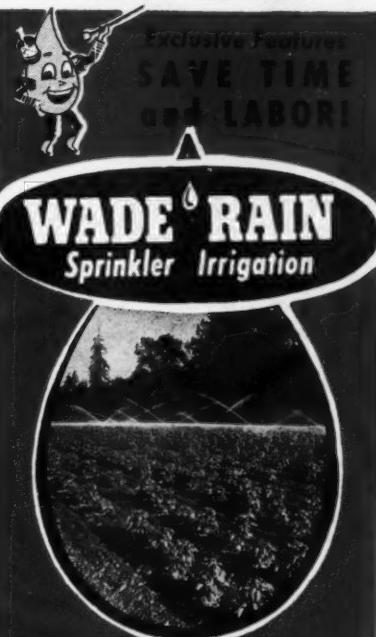
These four dusts are the basic control program for early and late blights and anthracnose. If the latter disease persists, a dust of 10% Zerlate is made just before ripening. Weather has much to do with the number of late dust applications.

This year Gerhart is changing his dust program on sweet corn from a straight 10% DDT to an alternating program. The first three dusts are with a 5% DDT, the fourth with a 2% parathion, and the fifth with a 10% DDT. This is based on a schedule of five applications beginning just when the first corn borer eggs hatch and repeating every five days. About 40 pounds of dust are applied per acre.

THE END.

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AIR-BLAST SPRAYING

(Continued from page 9)

of sprayer designs have been carried on at the Ohio Experiment Station, in co-operation with the USDA Engineering Laboratory at Toledo, during the past five years. In 1952 a large air-blast sprayer capable of delivering 26,000 cubic feet of air a minute at an outlet velocity of 90 miles per hour was compared with the usual type of hydraulic sprayer equipped with an off-side boom in several different tomato fields. Foliage and fruit diseases were comparatively scarce.

The control obtained with the two machines was approximately equal when a 2X formulation of maneb was applied at 80 gallons per acre. When the air-blast machines were used to apply 2X, 2.7X, 4X, and 8X formulations at 80, 60, 40, and 20 gallons per acre, respectively, the degree of disease control obtained with the three higher rates was very similar, but 20 gallons of an 8X concentrate did not do as well.

Comparative Results

At Fremont, Ohio, in 1954, an experimental air-blast sprayer was used to apply maneb to tomatoes in 4X, 5.3X, 8X, and 16X formulations at 40, 30, 20, and 10 gallons per acre. At 40 gallons per acre the air-blast application gave slightly better control of fruit rots than was obtained with a hydraulic sprayer. It happened that the 30-gallon per acre rate (using a 5.3X concentrate) gave better control than 40 gallons, or than 20 and 10. The reason for the better performance at 30 gallons was not apparent, but it did show that good disease control could be obtained using an air-blast sprayer with comparatively low-gallonage applications.

In another comparison between these two types of spray applications made at Apple Creek, Ohio, in 1953, the hydraulic machine gave slightly better average control of a rather heavy infection of anthracnose fruit rot of tomato than did the air-blast sprayer when both machines were used to apply maneb at 20, 40, and 80 gallons per acre.

This situation was reversed at Toledo in 1954 in a field of late tomatoes where early blight was scarce and anthracnose rot was of only medium severity. In that experiment the air-blast application gave the better control of anthracnose at comparable gallonages.

In still another experiment of a similar nature at Bloomingdale in 1955, where at least one-third of the fruits in the untreated check plot were infected with anthracnose, two different air-blast sprayers gave considerably better control of the disease than was

obtained by spraying with a hydraulic boom.

The data obtained in these experiments, conducted over a period of four years, indicate that, at comparable gallonages, the air-blast sprayer may be expected to give as good control of most of the foliage and fruit disease of tomato as can be obtained with hydraulic equipment, provided weather conditions are reasonably favorable for air-blast spraying.

Width of Swath

To get the best results with air-blast equipment the grower should avoid using a single swath much wider than 40 feet (80 feet double).

In 1953 a detailed study was made of the decrease in air velocity at increasingly greater distances from the air outlet of a comparatively large air-blast sprayer especially designed for treating row crops. The machine had a capacity of about 26,000 cubic feet of air delivered at approximately 90 miles per hour at the point where the nozzle manifold was mounted.

The average velocity during trials conducted on five different days at a point of 6 feet from the air outlet was 23.7 miles per hour. It was nearly as great at 18 feet with a value of 18.8 m.p.h. At 30 feet it was 15.5 miles. However, at 42 feet from the point of air emission the rate of air movement had decreased to 8 miles per hour, with a still further drop to 5.3 miles at 54 feet. The average velocities at the 6-, 18-, and 30-foot stations were about 4 miles per hour greater when the air-blast was traveling with the wind than when it was moving against it.

This drop in the rate of air movement with an increase in distance from the air outlet caused a considerable decrease in the quantity of spray material deposited on the foliage. The amount of copper per square centimeter of leaf area was 21, 17, 14, 6, and 5 micrograms at points 6, 18, 30, 42, and 54 feet from the sprayer, respectively.

These data indicate that the ability of a machine of this type, which was similar in size and design to many of those now in use, to carry and distribute spray material in a satisfactory manner decreases rapidly beyond a distance of 30 feet, until at 42 feet the spray deposit may be only one-third of that at 18 feet. This quantity (6 micrograms per square centimeter) would, of course, be doubled as the sprayer returned in going the opposite direction down the field, assuming that it was not over 42 feet away as it passed any given point along the swath.

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How the quantity of copper (or any other spray material) may decrease in the center of a double swath is illustrated by the deposit data obtained in the Fremont experiment. In that instance the average quantity of copper in micrograms recovered from each square centimeter of leaf surface in the center of the swath was only 15, compared with 25 to 30 micrograms from leaves only 12 feet from the edges. The maximum and minimum values of a similar swath treated with a hydraulic sprayer were 19 and 15 micrograms, respectively.

This variation in deposit values across the air-blast swath might seem to be a serious indictment of the sprayer, but it is interesting to note that the minimum of 15 micrograms per unit of leaf surface was still as large as that for the hydraulic sprayer. Also, the total recoverable copper from the foliage of an air-blast swath is often 50% greater than that to be found on a swath of the same width treated with a hydraulic sprayer.

The reason for this difference is not clear, but it seems likely that more of the spray material is intercepted by the foliage as it travels horizontally across the tops of the plants, and less falls to the ground before it encounters a leaf than when it is forced

vertically downward from the nozzle of a boom mounted on a hydraulic sprayer.

The experimental data so far obtained indicate that most air-blast sprayers, when properly used, are capable of giving a sufficiently good degree of disease control on such row crops as potato and tomato, and thus probably on many other crops also, that their use for that purpose may be recommended.

Specific Recommendations

However, certain specifications must be met by both the sprayer and its operator if best results are to be obtained.

- 1) A sprayer of average size should have the capacity to deliver at least 15,000, and better still 17,000 or more, cubic feet of air per minute at an outlet velocity of 80 to 100 miles per hour.

- 2) The pump should have a capacity of at least 15 to 20 gallons per minute and be capable of developing pressures of 500 to 600 pounds per square inch (a pressure of 400 p.s.i. is most commonly used).

- 3) Single swath widths should seldom exceed 40 to 45 feet (80 to 90 feet between sprayer driveways) and the sprayer should not be operated when the rate of air movement

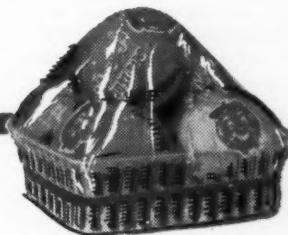
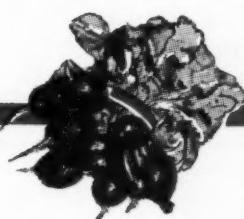
(wind) is in excess of 6 or 7 miles per hour.

- 4) It is possible that the recommended rate of application may some day be dropped to as little as 20 gallons per acre, but at present the use of 30 to 40 gallons seems most likely to give good results. The corresponding spray-mixture formulations for these gallonages are an 8X at 20, a 5.3X at 30, and a 4X at 40 gallons per acre.

Specially designed, or extra large, machines may exceed some of the specifications given above, but the operator should be very certain that he can spray wider swaths than those suggested, use his sprayer in higher winds, or use more concentrated formulations at lower gallonages than those suggested, before he takes a chance on a lesser degree of disease control.

Finally, the material presented in this article should not be interpreted as an unqualified endorsement of the air-blast sprayer, in its present stage of development, as the best means of controlling vegetable diseases. However, it now appears very likely that this type of equipment will gain steadily in popularity and may eventually replace present-day hydraulic sprayers with all but the small grower whose fields or plots may be too small for its use.

THE END.



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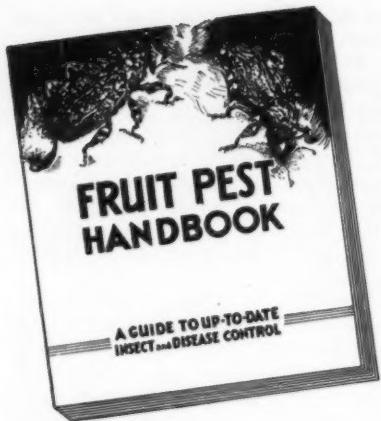
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KILL 20 MILLION WEEDS

(Continued from page 13)

grower were: What per cent spray is best? Which stage of the onion will tolerate a 1%, 1½%, 2% solution? What time of day is best to spray? How large a weed will the 1%, 1½%, and 2% kill?

Precision chemical weed killing resulted after worry, failures, disappointments and burned onions. However, many weeds can now be controlled successfully in onions with potassium cyanate.

Seed onions will tolerate a 1½% cyanate spray (6 pounds in 48 gallons of water) in the crook or tight-fold stage. Once the flag is up (the 7 stage), they will be hurt. If the spray is too late, a hand weeding job is necessary.

When the first "true" onion leaf is 3 inches long, a 1% spray can be used. The difference between a weed which can and cannot be killed with a 1% solution is about three days. Cyanate doesn't kill large weeds.

As the onion becomes taller, the cyanate solution can be increased to 2% if the spray is directed and kept off the onion leaves. The soil and weeds should be sprayed, not the onions. Cyanate kills many soft, broad-leaved annual weeds except lamb's-quarters. Rarely will cyanate kill purslane that is larger than a dime.

Special grade cyanamid, 75 pounds per acre applied before seed onion emergence, works successfully on muck soils when soil moisture is good. Stoddard Solvent applied before onion emergence kills the few weeds that are up at that time.

Chloro IPC, which must have descended from heaven, kills purslane and chickweed. These two kinds of weeds have been called by many names too numerous or too uncouth to mention. CIPC, 2 quarts in 50 gallons of water per acre (on mineral soils), 4 quarts per acre (on muck soils) before seed onion emergence, gives excellent chickweed and purslane control. Later CIPC sprays can be applied as needed, at the same rates, to control these two weeds. Control lasts from two to six weeks. Good soil moisture is necessary for good results.

Set and Transplant Onions

Set onions will tolerate a 1½% cyanate when they are 3 inches tall. Transplants will tolerate the same about ten days after setting. Sprays should be directed to avoid the onion leaves. Later sprays of CIPC are used as needed (4 quarts per acre on muck soils; 2 quarts per

acre on mineral soils) for chickweed and purslane control.

Effective onion weed control is not simple. Growers should be cautious until they thoroughly understand the action of these chemicals on crops and weeds.

Peas: Premerge or Sinox PE, one quart in 30 to 50 gallons of water per acre when the peas are 2 to 4 inches tall, kills most of the broad-leaved weeds. Air temperature must be between 70° and 80° F. to kill weeds and avoid injury. Container directions should be followed carefully when sprays must be applied at higher or lower temperatures.

Spinach: Chickweed in the spring, fall, and winter, with purslane in the summer, keeps many a vegetable grower busy. Chloro IPC, at 2 quarts per acre in 50 gallons of water during the summer, will give control for four to six weeks. In spring and fall when air temperature is 60° F. or below, one quart is top limit per acre. **Important:** CIPC should be applied immediately after seeding; soil moisture must be good; CIPC should be used only on mineral soils for spinach weed control.

Sweet Corn: One-half pound of 2,4-D per acre applied when the corn is 2 to 4 inches tall, is an old standby. Later sprays usually affect the corn. Earlier sprays at this rate don't kill enough weeds since they haven't emerged.

Watermelons, Cucumbers, and Muskmelons: Alanap-1 applied soon after planting, at 2 pounds in 50 gallons of water per acre, has given control of many broad-leaved weeds and annual grasses. The effectiveness of this weed killer varies with soil type. Follow directions with extreme care, and go slow if it's your first time with this chemical.

Continue Tillage

Chemical weed control is a supplement for cultivation and not a replacement.

The action of the herbicides (weed killers) mentioned were observed on the respective crops on several hundred farms in central New York (Madison County—bean and onion country) and western Long Island (Nassau County and Staten Island) by the author over a period of seven years.

The action of weed killers varies from area to area, and even from farm to farm. Contact your local extension service for area recommendations.

THE END.

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Answering Your QUESTIONS

Don't let your questions go unanswered. Whether large or small, send them with a three-cent stamp for early reply to Questions Editor, AMERICAN VEGETABLE GROWER, Willoughby, Ohio.

CARROT BLACK ROT

I store my carrots in November in trenches 2 to 3 feet wide, 2 feet deep, and 2½ feet above ground. The trenches are about 75 to 100 feet long and I put air vents about 12 feet apart. When I take the carrots out of the trench to wash and ready them for cello pak, they have black spots on them. How can I prevent this?—Colorado

It sounds as if the trouble is black rot caused by the fungus *Alternaria radicina*. Black rot occurs as a result of rough handling prior to storage. There is a progressive increase in the prevalence of the disease as temperatures increase above 32°-35°F. To remedy the difficulty, try to handle your carrots more carefully and keep the temperature in the trenches as low as possible and still avoid freezing injury.

TOMATO VARIETY

Where can I obtain seed of the Kopiah tomato which was developed at the Mississippi Experiment Station?—New York.

Seed of the Kopiah tomato can be obtained from the following companies: Associated Seed Growers, Inc., 205 Church St., New Haven 2, Conn.; W. Atlee Burpee Co., Philadelphia 32, Pa.; Ferry-Morse Seed Co., Detroit, Mich.; and Service Seed Co., Crystal Springs, Miss.

HARDENED PLANTS

What are the advantages of hardened, frost-proof cabbage and tomato plants?—Minnesota.

Nearly all northern plant growers harden their plants before sale. However, there are no frost-proof tomato plants, and there is nothing that can be done in plant production practices that will make them frost-proof. Nevertheless, anything that is done in the way of hardening that will slow up growth and tend to toughen tomato plants prior to transplanting, improves the percentage of survival and the rapidity with which growth will be resumed in the field after transplanting.

Cabbage plants will withstand cold temperatures if they have been hardened by gradually subjecting them to low temperatures. S. H. Wittwer of Michigan State University reports that cabbage plants have been known to withstand 10° or 15° below freezing for a short period of time. However, an excess amount of hardening by exposure to cold temperatures will likely induce bolting when continued for several weeks.

MILDEW RESISTANT CANTALOUP

Where can I obtain seed of the Powdery Mildew Resistant strain No. 45 cantaloup mentioned in your article on Arizona?—New Jersey.

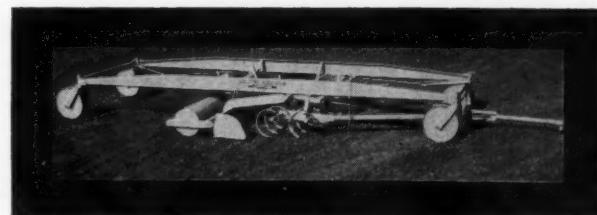
Try Associated Seed Co., 205 Church St., New Haven 2, Conn.; Ferry-Morse, Box 778, Detroit, Mich.; Cornelius Seed Co., St. Louis 2, Mo.; and F. H. Woodruff & Sons, Inc., Milford, Conn.

ONION SET HARVESTERS

Where can I obtain an onion set harvester?—Colorado.

Try R. G. Bruner Mfg. Co., 22516 Hoover Rd., Van Dyke, Mich.; Lauridsen Mfg. Co., 514 N. 11th Ave., Greeley, Colo.; and Paramount Mfg. Co., 1615 E. Main St., Stockton, Calif.

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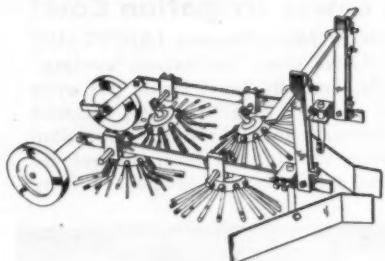
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Much has been said and written about precision seeding. There can be no doubt that in actual use the precision seeder will save growers like ourselves money not only by lowering seed costs, but by increasing production. The seeder pictured here is one of the best. It has passed every test with flying colors, and I can recommend it without reservation. You can get all the information you need on the new precision seeder by merely writing H. W. Laros at S. L. Allen & Co., 3419 N. Fifth St., Phila-

delphia 40, Pa. You'll find that the S. L. Allen seeder includes features not found in many other types of equipment.

Know Your Motor

It is very important that every vegetable grower know how many hours his tractor motor or sprayer motor has been operating. With this knowledge the grower can set up a program of preventative maintenance which will save money and increase the life and efficiency of his equipment. The direct-reading meter pictured above is a simple, easy way to do this. Extremely accurate, yet inexpensive, it is available in 6-volt, 12-volt, 24-volt, 32-volt, 64-volt and 110-volt models. Why not write Milt Kahn, Food Machinery & Chemical Corps., P.O. Box 1718, Lakeland, Fla., for your free booklet on hydrocooling and what it can mean to you.



Hydrocooling

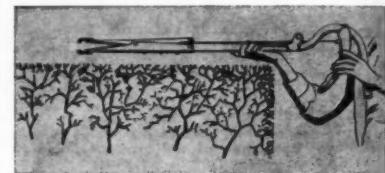


Vegetable growers everywhere are finding that hydrocooling increases quality and insures higher prices at the market. The hydrocooler pictured above is an improved model and handles sweet corn,



carrots, celery, asparagus, beans, radishes, peas, cauliflower, spinach, lettuce and onions with dispatch. Why not write Milt Kahn, Food Machinery & Chemical Corps., P.O. Box 1718, Lakeland, Fla., for your free booklet on hydrocooling and what it can mean to you.

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I have just finished reading one of the best vegetable seed catalogs I have ever read. This booklet is comprehensive and covers all the phases of vegetable growing along with a detailed description of the various seeds available. This booklet will be sent to all readers of AMERICAN VEGETABLE GROWER free of charge. It has over 128 pages, and is something you should certainly have on your desk. Why not write the Cornelius Seed Company, 101 Chouteau Ave., St. Louis 2, Mo., and ask Mr. Joseph Burger to send you their catalog #14?



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MAY, 1956

ELECTRIC HOTBED BETTER THAN MANURE'

TOMATO plants are grown in an electric hotbed on the farm of George Barker, Mechanicsville, Va.

The permanent 12-sash bed made of cinder block is 38 x 6 feet. One of the sidewalls which supports the glass sashes on a slant is 17 inches deep, the other is 12 inches deep. There is 360 feet of heating cable in the bed crossing it every 7 inches, with outlets for plugging in different sections. A thermostat in the soil controls temperature.

Barker covers the cable with 6 inches of dirt, sows the seed, sets the thermostat at 65° F., and forgets it. He estimates that \$15 worth of electricity will heat a bed until time to move the plants to the coldframes.

The manure needed to accomplish the same purpose would cost \$12—and you have to find the manure, haul it, and put it down.

Barker said, "You can't regulate the heat with manure. Sometimes the stuff will run the temperature up to 125° F. and burn up the plants. Electricity makes them grow a lot more uniformly."

Electrical materials and labor for the hotbed came to about \$135, but Barker pointed out, "You save on materials for the bed. The regular manure bed is a lot deeper."

He expects to get 8,000 plants out of the new electric hotbed.—George E. Toles.

BOOK REVIEW

The Gardener's Bug Book by Cynthia Westcott. \$7.50. The American Garden Guild and Doubleday & Company, Inc.

When the first edition of this handbook of garden pests and their control appeared in 1946, it was hailed by the *New York Herald Tribune* as "the garden bug book to end all garden bug books."

Since then, says the author, new chemicals came on the market so fast that it became imperative to revise the 579-page volume. This second edition contains all the new pests, all the new chemicals, and all the new recommendations for control. With full-color illustrations of 102 pests, and numerous line drawings, the book is a valuable aid to the home gardener in growing vegetables, fruit, ornamentals, flowers, or just plain grass.

Dr. Westcott was the first plant pathologist to go into private practice as a physician to gardens some 25 years ago. Operating as The Plant Doctor in New Jersey and New York, she sprays over 50 gardens a week from May to November and manages to lecture around the country besides.

MAY, 1956

MEDICAL

LATEST METHODS TREATING PILES, Fistula, Colon-Stomach disorders. Write for free book. McCLEARY CLINIC AND HOSPITAL, E545 Elms Blvd., Excelsior Springs, Mo.

MISCELLANEOUS

PEAFOWL, PHEASANTS, GUINEAS, BANTAMS, Waterfowl, thirty varieties Pigeons. JOHN HASS, Bettendorf, Iowa.

MAILING LISTS—100,000 CAREFULLY selected names in the Agricultural Field, individual lists of Potato Growers, Tomato Growers, Corn Growers and many others. Ideal for firms wishing to contact leading growers and dealers. For details write: MACFARLAND CO., Box 2, 8 Elm Street, Westfield, N. J.

NOW YOU CAN'T AFFORD NOT TO KNOW soil analysis—ph, nitrogen, phosphate, potash—\$3.50. Satisfaction guaranteed. TRACE DETECTION LABS., 4920 Plum Drive, Houston 17, Texas.

PLANTS

"OZARK BEAUTY" AMAZING NEW EVER-bearing strawberry 20th Century and Redrich Cross. It's vigorous, healthy, productive and wonderful flavor. Photos and circular, write WINNS BERRY FARMS, Westfork, Ark.

SALES MEN WANTED

FARMERS, DEALERS, AGENTS — MAKE extra money. Demonstrate, take orders, new proven nationally advertised Gro-Green Liquid Fertilizer and Nitrogen Nutrients. Full-time part-time. Samples and demonstrating outfit FREE. CAMPBELL CO., Rochelle 91, Illinois.

WANTED — HARDWARE SALESMEN IN Ohio and Western Pennsylvania who are calling on hardware stores and garden supply stores to sell a non-competing line on a straight commission. An excellent way to add to your income. All inquiries will be kept confidential. Write BOX 104, Hardware Retailer, Indianapolis 4, Indiana.

VEGETABLE PLANTS

SWEET POTATO PLANTS. GUARANTEED. Nancy Hall, Portoricans, 500, \$1.50; 1,000, \$2.50; 5,000, \$11.75. "Bunch" Portoricans, 200, \$1.25; 500, \$2.25; 1,000, \$4.00. Planting guide free. SUNSHINE PLANT CO., Gleason, Tenn.

OPPORTUNITY ADS

Only 25c a word for one-time insertion. 20c a word for two-time insertion; 15c a word for four-time insertion—CASH WITH ORDER. Count each initial and whole number as one word. ADDRESS AMERICAN VEGETABLE GROWER, Willoughby, Ohio.

FOR SALE—EQUIPMENT AND SUPPLIES

FOR SALE—ASPARAGUS TRIMMER AND conveyor, vegetable tongs. MANHATTAN GARDENS, Manhattan, Illinois.

4-ROW HARBISON-PAINE 'MILTON' PRECISION planter with fertilizer attachment. GEO. DEVRIES FARMS, Evergreen Park, Illinois.

SAWDUST MAKES GOOD FERTILIZER

You can apply 15 tons of sawdust per acre to build rich top-soil rapidly, and greatly increase nitrogen level, if you use the *ACTIVO* process. Cheaper, more economical, and better soil condition than with chemical fertilizers. No compost-heap making. Apply now; anytime. Rush postcard for free bulletin, "How to Turn Waste into Gold."

THE ACTIVO PROCESS, Bridgeton 18, Ind.

FOR SALE—REAL ESTATE

IF YOU ARE AN EXPERIENCED VEGETABLE grower and want a greater return for your efforts, in both income and healthy living, there is a sunny future for you in South Florida. We have available some of the finest farmland in the east coast, west coast or Everglades sections. You, like many successful growers, might find the soils and climate of South Florida to your liking. Wire or write HAROLD RABIN CO., INC., produce brokers and shippers, P. O. Box 7, Belle Glade, Florida.

IRRIGATION EQUIPMENT

DRAGON DISTRIBUTORS WANTED—Looking for a trouble-free money-making sprinkler irrigation line? We manufacture DRAGON, one of the best. Also, DRAGON injectors for sprinkler-fertilization. Inquire today. DRAGON ENGINEERING COMPANY, 626 McClary, Oakland 21, California.

OPPORTUNITY ADS

BUY, SELL AND TRADE—Readers and business firms will get top advertising value at low cost from AMERICAN VEGETABLE GROWER "Opportunity Ads." These classified ads are widely read, widely responded to by AMERICAN VEGETABLE GROWER'S high-income readers throughout America. Our classified advertising department will run your ad under any heading and will guarantee correct insertion.

RATES—For one insertion, 25c per word. For two insertions, 20c per word. Four insertions, 15c per word. Count each initial or whole number as one word. CASH WITH ORDER.

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AMERICAN VEGETABLE GROWER | WILLOUGHBY, OHIO

Action That Nets Growers a Profit

STRAWBERRY growers in southwest Michigan last year sold their second largest crop on record for the second highest average price in history. The highest price, received a few years ago, was in a year when few strawberries went to market. Peach growers in the same area experienced a better market and price last year than in any other section of the United States.

Why?

The growers themselves have the answer. They feel their good returns last year stem from the \$20,000 they spent in well-directed sales promotion. R. F. Bittner, district marketing agent at St. Joseph, will agree with them.

What is the story behind their high returns? About 1950 strawberry growers in Berrien, Van Buren, Allegan, and Cass counties organized the Southwest Michigan Strawberry Growers Association. Their purpose was to further the berry industry in their area and start some promotional work.

Two years ago the peach growers informally organized the Michigan Fruit Sponsors, primarily for the purpose of promoting the sale of their fruit. Having little money and no definite plans, not much was done until last year.

When District Marketing Agent Bittner discussed these two promotional programs with William Anderson, chairman of the Michigan State Agriculture Commission, they concluded the two ought to work together.

A meeting was arranged with the officers of both grower organizations; George McIntyre, director of the State Department of Agriculture; Mr. Anderson and Mr. Bittner; and the Benton Harbor Marketing Board.

The idea met with fine response and the Southwestern Michigan Fruit and Vegetable Promotion Committee was formed. The organization is so organized that if and when the need arises it can promote almost any horticultural crop grown in the area.

To help in financing the promotional efforts, the Benton Harbor Marketing Board agreed to contribute to the program 20 per cent of the revenue from each grower-load of produce sold through the big market.

Mr. Bittner is chairman of the promotion committee, and the various

interests are represented as follows: Strawberry growers—Otis Klett and John Babcock, both of Hartford. Michigan Fruit Sponsors—Earl Steimle, Sodus Fruit Exchange, Sodus, and Wallace Heuser, Hartford. Benton Harbor Market Board—Reid Sprague, Benton Harbor Farm Bureau—Peter Ruddell, Berrien Springs, for strawberries; Harry Zepik, Watervliet, for vegetables.

During the 1955 season this group met frequently to work out details of the promotional efforts. They hired the Paxson Advertising Agency of Benton Harbor to help set up and carry out promotional programs. Last season promotional efforts were concentrated on strawberries and peaches, with tomatoes, cantaloupes, and cucumbers getting some attention. Promotional work consisted of radio and newspaper advertising, store streamers and letters to wholesalers, brokers, and produce men informing them, ahead of time, of the promotions planned on a given product.

The promotional work was carried on in five states—in such principal market centers as Chicago, Detroit, Cleveland, Columbus, Indianapolis, Fort Wayne, South Bend, and Milwaukee. The response was gratifying even though the group had only \$20,000 to do the job.

The growers raised \$10,000 and the Michigan Department of Agriculture, which matches dollar for dollar the money raised by a farm organization

for the promotion of its products, matched it with an equal amount.

This year the committee expects to have considerably more money available and plans a more complete job of promoting horticultural crops. The organization is sparked with the kind of vitality that brings positive results.

We Are the Key

AGRICULTURE today is endeavoring to win its place in this, the power age, by putting to use every available technological development.

Fundamentally, our achievements are of a personal nature. One person may conceive an idea, and may even put it into practice. The influences and effects of the idea, however, may change the lives of countless other persons. We need think only of the discovery of electricity by Benjamin Franklin, or of the invention of the electric light bulb by Thomas Edison.

These ideas came to mind as we read recently of the rising productivity of the American farmer, his ever-increasing efficiency. Over the past 15 years production per acre on our farms has increased one-fifth. An hour of a man's labor today produces twice as much produce as it did 15 years ago.

Greater use of the products of scientific research brings increasing dependence upon them and upon those who develop machines and chemicals and devise ways of using them. Thus, a chemist in a chemical manufacturing plant, a machinist in a tractor factory, a research worker in an agricultural experiment station are as responsible for changes in our spray programs, cultural practices, marketing systems as we, the growers, are. We are all interested in the same achievement; use of technological developments to raise the efficiency of production which in turn raises our standard of living.

We, the growers, are the key to this whole process. What if there were no incentive to make any changes? Industries would suffer. Our ability to purchase and use the products of technology is basic.

Coming Next Month

Irrigation Issue
featuring

- Guides to Efficient Irrigation
- Better Crops with Sprinklers
- What's New in Irrigation Equipment?
- Irrigation Problems in Florida

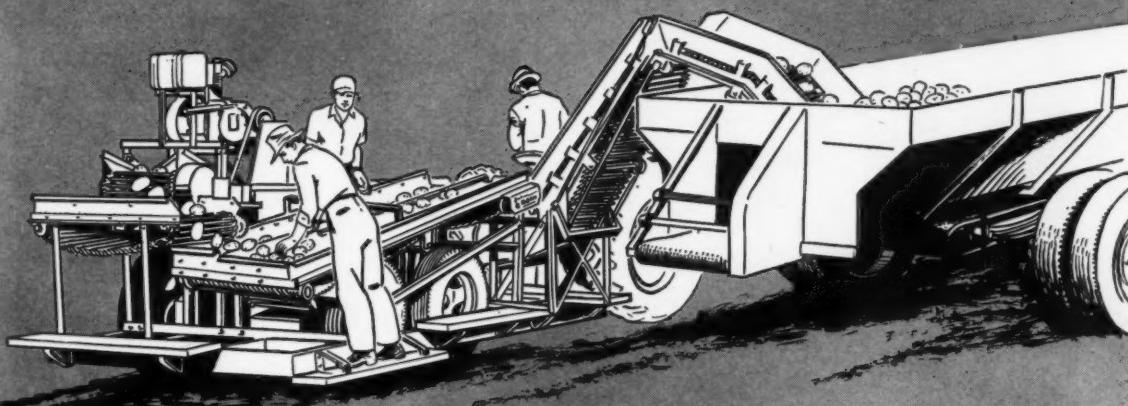
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MODEL 26 HARVESTER IN USE WITH BULK LOADING

REDUCE YOUR LABOR COSTS 50%-OR MORE!

Growers using John Bean Potato Harvesters have cut their labor costs in half — and see potential cost reductions of up to 75%. They're comparing their previous methods of hand digging, picking and loading with John Bean mechanical indirect harvesting and bulk loading. With the somewhat

slower method of direct harvesting, labor costs are still reduced appreciably.

Profitable operation with John Bean Harvesters is not limited to the large growers — it's been proven that farms with 30 acres or more, or neighbors combining acreage, can profit substantially.

ELIMINATE TRANSIENT LABOR PROBLEMS

No longer need growers be concerned with the difficulties of obtaining, supervising and housing large crews. John Bean Harvesters have replaced 30 to 40 pickers and allowed growers to use only their regular force. The faster, easier operation helps keep good men, too. John Bean Harvesters

have independent power units that do not rely upon tractor PTO, so that apron speeds can be regulated easily to ground speeds for better teamwork and maximum output. Digger and bulkloader are hydraulically controlled.

PRODUCE A BETTER, CLEANER, MORE MARKETABLE CROP

John Bean Harvesters give you the most complete separation of potatoes from stones and clods of any equipment on the market. Many growers say they get far less damage from cuts and

bruises than with hand digging, because the potatoes are picked up and dropped fewer times. You gain closer control over the quality of your crop and better opportunity for top prices.

JOHN BEAN MODEL 26 POTATO HARVESTER
is the field-proven, heavy-duty equipment for one-row direct or two-row indirect harvesting. Has 26" elevating conveyor and 30" sorting table.

JOHN BEAN MODEL 60 POTATO HARVESTER
especially designed for two-row direct harvesting, or four-row indirect. Has 60" elevator and 36" sorting table.

See your John Bean dealer for details on this profit-making equipment or write for catalog



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